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Cover: Professor Frederick McCoy was Director of the National Museum of Victoria last century and between 1878 and 1885 published a "Prodromus of the Zoology of Victoria with Figures and Descriptions of the Living Species of all Classes of the Victorian Indigenous Animals". This plate of a flat fish was prepared by McCoy but never published. The species is redescribed in this issue of the *Memoirs* by Martin Gomon *Zebrias scalaris* nom. nov.

MEMOIRS
of the
MUSEUM OF VICTORIA

MELBOURNE AUSTRALIA

Memoir 48
Number 1
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Robert Edwards

Deputy Director (Natural History)
Jim M. Bowler

Editor
Gary C. B. Poore

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Instructions to Authors

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NEW AUSTRALIAN FISHES. PART 1. INTRODUCTION

BY M. F. GOMON¹ AND P. R. LAST²

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Abstract

Gomon, M. F. and Last, P. R., 1987. New Australian fishes. Part 1. Introduction. *Mem. Mus. Vict.* 48: 1-2.

Papers describing new Australian fishes are introduced and listed.

Introduction

During recent years, a number of new faunal studies have been published on Australian fishes (e.g., Hutchins, 1979; Edgar et al., 1982; Last et al., 1983; Hutchins and Thompson, 1983; Gloerfelt-Tarp and Kailola, 1984; Sainsbury et al., 1985) in an attempt to satisfy the need for identification guides. Since many of the Australian fish families are relatively poorly known taxonomically, these relatively quickly prepared and published works contain references to a considerable number of previously undescribed species for which latinized names have not been proposed. The purpose of this collection of papers is to formally name many of the undescribed species that have been presented in such publications, together with others that will be included in forthcoming guides, so that colleagues may accurately refer to these species rather than having to use unstable common names or confusing references to undescribed forms. Descriptions are presented in a series of brief papers, or parts, provided by different combinations of authors to recognise efforts of those involved and authorships as originally intended. In an attempt to make these names available as soon as possible, most species are described in less detail than is customary. Each treatment provides, where relevant, a synonymy, type details, a brief description and/or diagnosis, distributional information, an etymology, brief comparisons with related species, and references to any published

illustrations. Most species treated are currently being studied by the respective authors for inclusion in revisions of higher taxa. These revisions are expected to be published within the next decade. Authors, titles and pages of subsequent parts of this series are:

Allen, G. R. New Australian fishes. Part 2. Four new species of Apogonidae. *Mem. Mus. Vict.* 48: 3-8.

Allen, G. R. New Australian fishes. Part 3. A new species of *Pomacentrus* (Pomacentridae). *Mem. Mus. Vict.* 48: 9-11.

Allen, G. R. New Australian fishes. Part 4. A new species of *Steeneichthys* (Plesiopidae). *Mem. Mus. Vict.* 48: 13-14.

Allen, G.R. and Ayling, A.M. New Australian fishes. Part 5. A new species of *Acanthurus* (Acanthuridae). *Mem. Mus. Vict.* 48: 15-16.

Gomon, M.F. New Australian fishes. Part 6. New species of *Lepidotrigla* (Triglidae), *Choerodon* (Labridae) and *Zebrias* (Soleidae). *Mem. Mus. Vict.* 48: 17-23.

Gomon, M.F. and Allen, G.R. New Australian fishes. Part 7. A new species of *Choerodon* (Labridae). *Mem. Mus. Vict.* 48: 25-26.

Gomon, M.F. and Kuitert, R.H. New Australian fishes. Part 8. A new species of *Aulotrachichthys* (Trachichthyidae). *Mem. Mus. Vict.* 48: 27-29.

Gomon, M.F. and Last, P.R. New Australian fishes. Part 9. A new species of *Kathetostoma* (Uranoscopidae). *Mem. Mus. Vict.* 48: 31-33.

Hoese, D.F. and Allen, G.R. New Australian

fishes. Part 10. A new genus and two new species of freshwater eleotridid fishes (Gobioidae) from the Kimberley region of Western Australia. *Mem. Mus. Vict.* 48: 35-42.

Hoese, D.F. and Larson, H.K. New Australian fishes. Part 11. A new genus and species of eleotridid (Gobioidae) from southern Australia with a discussion of relationships. *Mem. Mus. Vict.* 48: 43-50.

Hutchins, J. B. New Australian fishes. Part 12. A new species of *Eubalichthys* (Monacanthidae). *Mem. Mus. Vict.* 48: 51-52.

Knapp, L. E. New Australian fishes. Part 13. Two new species of Platycephalidae. *Mem. Mus. Vict.* 48: 53-55.

Last, P.R. New Australian fishes. Part 14. Two new species of *Dasyatis* (Dasyatidae). *Mem. Mus. Vict.* 48: 57-61.

Last, P.R. and Gomon, M.F. New Australian fishes. Part 15. New species of *Trygonoptera* and *Urolophus* (Urolophidae). *Mem. Mus. Vict.* 48: 63-72.

Last, P.R. and Edgar, G.J. New Australian fishes. Part 16. A new species of *Crapatalus* (Leptoscopidae). *Mem. Mus. Vict.* 48: 73-74.

Paulin, C.D. New Australian fishes. Part 17. New species of *Gadella* and *Physiculus* (Moridae). *Mem. Mus. Vict.* 48: 75-77.

Poss, S. G. and Allen, G.R. New Australian fishes. Part 18. A new species of *Cocotropus* (Aploactinidae). *Mem. Mus. Vict.* 48: 79-82.

Roberts, C.D. New Australian fishes. Part 19. A new species of *Lepidoperca* (Serranidae). *Mem. Mus. Vict.* 48: 83-84.

Russell, B.C. New Australian fishes. Part 20. A new species of *Aplodactylus* (Aplodactylidae). *Mem. Mus. Vict.* 48: 85-87.

Shimizu, T. and Hutchins, J. B. New Australian fishes. Part 21. A new species of *Centroberyx* (Berycidae). *Mem. Mus. Vict.* 48: 89-90.

Each of these parts is an independent, anonymously refereed paper authored by the respective contributor or contributors. We are not to be considered editors of the series.

Acknowledgements

We are grateful to Gary Poore, editor of the *Memoirs*, for his assistance in the publication of this series.

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NEW AUSTRALIAN FISHES. PART 2.
FOUR NEW SPECIES OF APOGONIDAE

BY G. R. ALLEN

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Abstract

Allen, G.R. 1987. New Australian fishes. Part 2. Four new species of Apogonidae. *Mem. Mus. Vict.* 48: 3-8.

Four species of apogonid fishes are described from Australian seas: *A. pallidofasciatus* (northern Western Australia), *Rhabdamia eremia* (northern Australia and widespread in the Indo-West Pacific), *Vincentia badia* (South Australia and southern Western Australia), and *V. macrocauda* (South Australia and southern Western Australia).

Introduction

The perciform family Apogonidae or cardinal fishes contains approximately 200 species in 26 genera. Most members are found on or in the vicinity of coral reefs, although the Australian genus *Vincentia* is confined to temperate waters. The family remains poorly studied and is in need of revision at the generic level. Approximately 100 species occur in Australian seas. The present paper describes four new species belonging to the genera *Apogon*, *Rhabdamia* and *Vincentia* as defined by Fraser (1972). Placement in these groups was based on both external features and examination of osteological characters facilitated by cleared and stained specimens and radiographs.

Type specimens are deposited at the Australian Museum, Sydney (AMS), Bernice P. Bishop Museum, Honolulu (BPBM), Museum of Victoria, Melbourne (NMV), South Australian Museum, Adelaide (SAM), and Western Australian Museum, Perth (WAM). In the following descriptions the range of counts and proportions for paratypes are indicated in parentheses if different from the holotype. The designation "½" appearing in fin-ray counts refers to the last ray when it is joined to the base of the penultimate ray.

Apogon pallidofasciatus sp. nov.

Figure 1

Material examined. Holotype. Western Australia, Tantabiddi



Figure 1. *Apogon pallidofasciatus*, holotype (WAM P2898 5-001), 100.3 mm SL, North West Cape, Western Australia.

Creek (21°54'S, 114°00'E), North West Cape, 3-4 m, spear, G. Allen, 21 May 1976, WAM P28985-001 (100.3 mm SL).

Paratypes. Western Australia, collected with holotype, AMS I.26316-001 (71.5 mm SL); Rosemary Island (20°29'S, 116°35'E), Dampier Archipelago, 1-5 m, rotenone, G. Allen, 8 Nov 1974, WAM P25114-004 (79.0 mm SL); Lady Nora Island (20°27'S, 116°37'E), Dampier Archipelago, 3 m, rotenone, G. Allen and R. Steene, 16 Nov 1974, WAM P25117-009 (86.0 mm SL); Port Hedland (20°18'S, 118°35'E), A. Kalnins, 15 Jun 1965, BPBM 30940 (4: 60.5-78.5 mm SL) and 1-2 m, rotenone, N. Sarti and R. Kelly, 18 Jan 1981, WAM P27274-046 (5: 73.7-80.0 mm SL).

Description. A striped species of apogonid belonging to the *Apogon cooki* "complex" and distinguished by the following combination of characters: dorsal rays VII-1, 9½; anal rays II, 8½; pectoral rays 14 (occasionally 15); lateral-line scales 24 plus 4 additional scales on caudal fin base; gill rakers on first arch including rudiments

5 + 14 = 19 (5 or 6 + 14 or 15 = 19-21); greatest body depth 2.5 (2.5-2.7), head length 2.7 (2.5-2.7), both in standard length; snout length 4.5 (4.3-4.6), eye diameter 3.0 (2.6-2.9), interorbital width 4.6 (4.4-4.9), least depth of caudal peduncle 1.9 (1.9-2.3), length of caudal peduncle 1.4 (1.2-1.5), of pectoral fin 1.5 (1.3-1.5), of pelvic fin 1.7 (1.3-1.7), maximum height of second dorsal fin 1.4 (1.4-1.7), of anal fin 1.9 (1.8-2.0), all in head length.

Colour in life: overall reddish-brown with very faint, nearly indistinguishable pattern of 4 to 6 dark stripes on sides, these stripes more evident in smaller specimens; a rounded spot, about pupil size, at base of caudal fin, more pronounced in specimens under about 60 mm SL; a silvery or whitish stripe from snout to eye and continued behind eye to rear of operculum; fins dusky brown to reddish; base and axil of pectoral fin may be dusky brown, but not significantly darker than surrounding area.

Colour in alcohol: overall brown including fins except pectorals only slightly dusky; darker stripes on side faintly visible; a roundish spot, about pupil size, faintly visible on caudal fin base. Gut brownish, this coloration due to dense network of melanophores; peritoneum pale with widely scattered black spots.

Distribution. Known thus far only from Western Australia between North West Cape and Broome.

Etymology. From the Latin *pallidus* (pale) and *fasciatus* (stripe), referring to the characteristic dull stripes compared to other members of the *A. victoriae* "complex".

Remarks. *Apogon pallidofasciatus* belongs to a complex of four closely related species that occur in Australian coastal habitats, exclusive of off-shore reef areas such as the Great Barrier Reef. Other members of this group include *A. victoriae* Günther of south-western Australia and an undescribed species from New South Wales and southern Queensland. The other member, *A. cooki* Macleay is wide ranging in the Indo-West Pacific region. Diagnostic features of these species are contrasted in Table 1. *A. pallidofasciatus* is sympatric only with *A. cooki* from which it differs by having a larger eye, a larger maximum size, usually 14 rather than 15 pectoral rays, 19-21 (usually 20) rather than 16-19 gill rakers on

the first gill arch and in having the dark body stripes absent or faint in adults.

Apogon pallidofasciatus occurs on shallow (about 2-8 m) reefs, usually close to shore, where there is moderate turbidity.

Rhabdamia eremia sp. nov.

Figure 2

Rhabdamia species Allen, 1985: 2327, Fig. 172.

Material examined. Holotype. Western Australia, South Murion Island (21°42'S, 114° 20'E), 8 m, rotenone, B. Hutchins and J. Tryndall, 7 Jun 1977, WAM P25815-020 (37.5 mm SL).

Paratypes. Western Australia. Collected with holotype, AMS 1.26320-001 (22.0 mm SL). Beacon Island (28°29'S, 113°47'E), Abrolhos Group, 3-10 m, rotenone, G. Allen, 9 Apr 1978, WAM P26071-013 (26.1 mm SL) and 25-30 m, rotenone, G. Allen and N. Sinclair, 13 Apr 1982, WAM P27581-001 (39.6 mm SL). Clerke Reef (17°16'S, 119°22'E), Rowley Shoals, 35-40 m, rotenone, G. Allen and R. Steene, 6 Aug 1983, WAM P28024-009 (22.0 mm SL).

Queensland, Escape Reef (15°50'S, 145°50'E), 2-8 m, rotenone, J. Paxton et al., 27 Oct 1981, WAM P27459-006 (30.4 mm SL).

Indian Ocean, Christmas Island (10°28'S, 105°24'E), 15-20 m, rotenone, G. Allen and R. Steene, 20 May 1978, WAM P26085-015 (25.5 mm SL) and 14 m, rotenone, G. Allen and R. Steene, 25 May 1978, WAM P26092-023 (2: 20.0- 21.0 mm SL).

Red Sea, near Jeddah (21°28'N, 039°08'E), Saudi Arabia, WAM P25793-003 (6: 25.0-31.0 mm SL).

Description. A small, semi-transparent species of *Rhabdamia* distinguished by the following combination of characters: dorsal rays VI-I, 9½ (rarely 10½); anal rays II, 13½ (12½ or 13½); pectoral rays 10; gill rakers on first arch 1+12=13 (1+11 or 12=12 or 13) plus 1-2 low rudiments on upper limb; lateral-line scales missing from all specimens, but judging from "scale pockets" probably about 24; greatest body depth 4.0 (3.64.0), head length 2.7 (2.5-2.9), both in standard length; snout length 4.2 (3.4-4.8), eye diameter 3.3 (3.0-4.1), interorbital width 4.0 (3.8-4.6), least depth of caudal peduncle 3.3 (3.3-3.5), length of caudal peduncle 1.5 (1.3-1.5), of pectoral fin 1.5 (1.4-1.5), of pelvic fin 2.0 (1.9-2.4), maximum height of second dorsal fin 2.0 (1.8-2.1), of anal fin 1.8 (1.8-2.6), all in head length.

Colour in life: head with light brown or reddish pigmentation on snout and cheek, operculum silvery; body semi-transparent with silvery abdominal region; fins clear.

Table 1. Comparison of diagnostic features for species in the "Apogon cooki complex"

	<i>A. cooki</i> (Australian specimens)	<i>A. victoriae</i>	<i>A. pallidofasciatus</i>	<i>Apogon</i> sp. (N.S.W.-Queensland)
total gill rakers first arch	15-18, occasionally 19	19-20	19-21	19-21
pectoral fin rays	15	14	14	14
eye in head length	3.0-3.3	3.0-3.4	2.6-3.0	3.0-3.2
approximate maximum SL (mm)	90, usually 70	115	110	110
stripe pattern	distinct	distinct	faint or absent (but evident in young)	distinct
width of dark stripes in relation to pale interspaces	wider or equal	wider or equal	wider or equal (if visible)	much narrower
postocular (3rd stripe)	present	present	present or absent	absent
black spot covering pectoral fin base and axil	poorly developed	present	absent	absent



Figure 2. *Rhabdamia eremia*, holotype (WAM P25815-002), 37.5 mm SL, South Murion Island, Western Australia.

Colour in life: head with light brown or reddish pigmentation on snout and cheek, operculum silvery; body semi-transparent with silvery abdominal region; fins clear.

Colour in alcohol: overall whitish or yellow-tan without pigmentation. Gut whitish; peritoneum with dense network of melanophores.

Distribution. Apparently widespread in the Indo-West Pacific. Thus far known from the southern Red Sea, Christmas Island (Indian Ocean), Western Australia and Queensland.

Etymology. From the Greek *eremos* (solitary), referring to its dwelling habit in contrast to *Rhabdamia cypselurus* and *R. gracilis* which occur in aggregations.

Remarks. *Rhabdamia eremia* co-occurs with *R. gracilis* and *R. cypselurus* at many localities, but unlike these species which form large diurnal aggregations around coral formations, it is mainly solitary and cryptic. It is usually seen only if flushed from coral reef crevices with rotenone at depths between about 10 and 40 m.

A diagnosis of the genus *Rhabdamia* Weber was provided by Fraser, 1972. The four members of this group are distinguished by the following key.

Key to species of *Rhabdamia*

1. Seven spines in first dorsal fin; scales ctenoid (Red Sea) *R. nigrimentum* (Smith)
- Six spines in first dorsal fin; scales cycloid 2
2. Anal fin rays II, 9½ (widespread Indo-West Pacific) *R. cypselurus* Weber
- Anal fin rays II, 12½-13½ 3
3. Gill rakers on lower limb of first arch 20-22 (widespread Indo-West Pacific) *R. gracilis* Weber
- Gill rakers on lower limb of first arch 11-12 (widespread Indo-West Pacific) *R. eremia* sp. nov.

Vincentia badia sp. nov.

Figure 3

Vincentia new species Allen, 1985: 2332, Fig. 183.

Material examined. Holotype. Western Australia, Port Peron (32°16'S, 115°36'E), 1 m, rotenone, N. Sarti, 29 Jan 1978, WAM P25999-006 (68.3 mm SL).

Paratypes. Western Australia, Port Denison (29°16'S, 115°55'E), 7-8 m, rotenone, N. Sinclair, 13 Apr 1983, WAM P27956-009 (2: 39.1-40.0 mm SL). Rottnest Island (32°01'S, 115°27'E), 11 m, rotenone, B. Hutchins, 11 Apr 1978, WAM P26060-006 (43.0 mm SL). Garden Island (32°12'S, 115°40'E), 5 m, rotenone, G. Allen, 10 Sep 1976, WAM P28967-001 (39.2 mm SL). Geographe Bay (33°32'S, 115°02'E), 15 m, rotenone, G. Allen and J. Moyer, 27 Dec 1978, WAM P26532-007 (57.7 mm SL) and 5 m, rotenone, B. Hutchins, 30 Jun 1982, WAM P27643-009 (2: 47.1-61.2 mm SL).

South Australia. Near Riley Point (33°53'S, 137°37'E), rote-

none, D. Hoese, W. Ivantsoff and D. Brown, 25 Dec 1973, AMS I.17614-004 (16: 16.3-40.1 mm SL). Cape Jervis (35°36'S, 138°06'E), R. Kuiter, 9 Mar 1984, NVM A3729 (35.5 mm SL).

Description. A relatively small, dusky brown apogonid distinguished by the following combination of characters: dorsal rays VIII-I, 9½ (rarely VII-I, 9½); anal rays II, 9½; pectoral rays 15; gill rakers on first arch 1+7 (1+6 or 7) plus 3-5 low rudimentary rakers on each limb; lateral-line scales 23 (occasionally 24) plus 1-2 additional scales at base of caudal fin; greatest body depth 2.3 (2.3-2.6), head length 2.5 (2.4-2.6), both in SL; snout length 5.3 (4.4-5.9), eye diameter 3.1 (2.6-3.2), interorbital width 3.7 (3.4-4.1); least depth of caudal peduncle 2.5 (2.4-3.2), length of caudal peduncle 1.6 (1.4-1.7), of pectoral fin 1.5

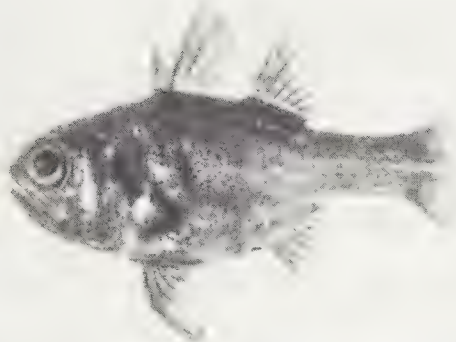


Figure 3. *Vincentia badia*, paratype (WAM P27643-009), 47.1 mm SL, Geographe Bay, Western Australia (B. Hutchins photo).

(1.6-1.7), of pelvic fin 1.3 (1.1-1.5), maximum height of second dorsal fin 1.7 (1.7-1.9), of anal fin 1.9 (1.8-2.1), all in head length.

Colour in life: overall reddish-brown, including fins, although pectorals somewhat lighter and translucent areas sometimes present on caudal membranes and on basal half of anal fin. Occasional specimens are primarily red.

Colour in alcohol: variable, ranging from overall yellow-tan with whitish or translucent fins to dusky brown, with centre of scales often light brown or tan and with all fins dusky brown except pectorals pale tan. Gut mainly whitish with scattering of melanophores; peritoneum with dense network of melanophores.

Distribution. Coast of southern Australia between Spencer Gulf, South Australia (33°53'S, 137°37'E) and Port Denison, Western Australia (29°16'S, 114°55'E).

Etymology. From the Latin *badius* (red-brown), referring to the characteristic coloration.

Remarks. This species is allied to *Vincentia conspersa* (Klunzinger) from south-eastern Australia (including Tasmania). It differs primarily by having fewer lateral-line scales (23 or 24 compared with 25 or 26 for *V. conspersa*; this count excludes 1-2 scales extending onto the caudal fin base), and a smaller size (under 70 mm SL, usually less than 55 mm SL, compared to about 115 mm SL for *V. conspersa*). The depth range of *V. badia* extends from 1 to at least 44 m. It generally occurs in rocky areas.

Vincentia macrocauda sp. nov.

Figure 4

Material examined. Holotype. Western Australia, Cheyne Beach (34°53'S, 118°25'E), rotenone, B. Hutchins, 19 Apr 1980, WAM P26608-017 (70.3 mm SL).

Paratypes. Western Australia. Lucky Bay (34°08'S, 122°15'E), 24 m, rotenone, B. Hutchins, 15 Apr 1984, SAM F.5471 (71.2 mm AL) and WAM P28298-010 (84.0 mm SL); 5-7 m, rotenone, B. Hutchins, 12 Apr 1984, WAM P28293-023 (52.5 mm SL); 8-10 m, B. Hutchins, 14 Apr 1984, WAM P28297-015 (2: 40.2-43.5 mm SL). Between Sandy Hook Island and Cape LeGrand (34°02'S, 122°03'E), A. Longbottom, 23 Jan 1986, WAM P28864-005 (62.0 mm SL).

South Australia, Troubridge Island (35°07'S, 137°49'E), J. Glover, 2 Feb 1969, SAM F.3916 (51.7 mm SL).

Description. Medium-sized apogonid with extremely elongate caudal peduncle and spotted fins distinguished by the following combination of characters: dorsal rays VII-I, 9½; anal rays II, 8 (II, 9½); pectoral rays 14 (14 or 15); gill rakers on first arch 5+12=17 (3-5+12-13=15-18), lateral-line scales 25 plus 2 additional scales at base of caudal fin; greatest body depth 3.1 (3.1-3.5), head length 2.8 (2.8-2.9), both in SL; snout length 4.1 (4.2-4.8), eye diameter 2.8 (2.6-2.9), interorbital width 3.3 (3.4-4.0), least depth of caudal peduncle 2.4 (2.3-2.6), length of caudal peduncle 1.2 (1.1-1.3), of pectoral fin 1.6 (1.51.7), of pelvic fin 1.2 (1.1-1.3), maximum height of second dorsal fin 1.3 (1.2-1.3), of anal fin 1.5 (1.5-1.7); most of scales cycloid, but a few scales on head and side of body with weak ctenii; predorsal scales absent.

Colour in life: overall reddish with bronze hue; pectoral fins clear; first dorsal fin blackish distally with basal part dusky brown, sometimes with faint whitish spots; other fins dusky brown with pupil-sized translucent to faintly yellow spots.



Figure 4. *Vincentia macrocauda*, paratype (SAM F.5471), 70.3 mm SL, Lucky Bay, Western Australia (B. Hutchins photo).

Colour in alcohol: head and body mainly pale yellowish tan; outer edge of first dorsal fin black, remainder of fin pale to dusky brown; other fins dusky brown with large white spots, except pectoral fins plain whitish. Gut darkly pigmented; peritoneum whitish with widely scattered melanophores.

Distribution. Coast of south-western Australia between Troubridge Island, South Australia to Cheyne Beach near Albany, Western Australia.

Etymology. From the Greek *makros* (long) and Latin *cauda* (tail), referring to the elongate caudal peduncle.

Remarks. This is a distinctive species that does not appear to have close affinities with other apogonids. The very long caudal peduncle (1.1-1.3 in head length) and the presence of mainly cycloid scales are distinctive features that differentiate it from other *Vincentia*. The placement of

this species in *Vincentia* is provisional. Preliminary results of a current study of southern Australian apogonids by Allen and Paxton indicate that *Vincentia* may possibly merit only sub-generic distinction within the genus *Apogon*.

Acknowledgements

I thank J. Randall of the Bishop Museum, Honolulu, for reviewing the manuscript.

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NEW AUSTRALIAN FISHES. PART 3.
A NEW SPECIES OF *POMACENTRUS* (POMACENTRIDAE)

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Abstract

Allen, G. R., 1987. New Australian fishes. Part 3. A new species of *Pomacentrus* (Pomacentridae). *Mem. Mus. Vict.* 48: 9-11.

A new species of damselfish (Pomacentridae), *Pomacentrus arenarius* is described from Queensland and northern Western Australia. The distributional range also extends eastward to the Fiji Islands and it is present in the eastern Indian Ocean at Sri Lanka and western Thailand. It is similar to *P. philippinus*, but differs by lacking scales on the suborbital, by having 15 rather than 14 soft dorsal rays, and lower gill raker counts. Moreover, the two species occupy different habitats.

Introduction

The family Pomacentridae contains about 310 species in 28 genera. About 130 species are known from Australian seas (Allen, 1975). This paper describes a species relatively common in many reef areas of northern Australia and adjacent regions. Type specimens of the new taxon are deposited at the Australian Museum, Sydney (AMS), Bernice P. Bishop Museum, Honolulu (BPBM), and Western Australian Museum, Perth (WAM).

***Pomacentrus arenarius* sp. nov.**

Figure 1

Material examined. Holotype: Australia, Queensland, Escape Reef, Great Barrier Reef (15°50'S, 145°50'E), 15 m, rotenone, G. Allen, 28 Oct 1981, WAM P27465-001 (68.0 mm SL).

Paratypes: Australia, Queensland, type locality, AMS I.26319-001 (68.6 mm SL); Lizard Island (14°40'S, 145°28'E), rotenone, Australian Museum party, Nov 1975, BPBM 30942 (69.0 mm SL); Escape Reef, 20-30 m, rotenone, G. Allen, 27 Oct 1981, WAM P.27461-004 (44.0 mm SL).

Western Australia, Kendrew Island, Dampier Archipelago (20°29'S, 116°32'E), 3-4 m, spear, G. Allen, 21 Oct 1974, WAM P25107-008 (2 specimens, 62.0-68.3 mm SL); North West Cape, off Tantabiddi Creek (21°53'S, 114°00'E), 15-18 m, spear, G. Allen, 30 Jun 1975, WAM P25371-004 (2 specimens, 60.0-74.5 mm SL).

Papua New Guinea, New Ireland, near Kapo Point, west side of Kieta Peninsula (6°11'S, 155°37'E), 28-33 m, rotenone, G. Allen, 2 Oct 1983, WAM P28161-002 (53.76 mm SL).

Vanuatu, Bogacio Island, off south-east coast of Espiritu Santo (15°30'S, 166°28'E), 20 m, rotenone, G. Allen, W.

Starck, D. Popper, 28 Jun 1973, WAM P24940-001 (88.5 mm SL).

Description. (Counts and proportions in parentheses refer to paratypes if different than holotype). Dorsal rays XIII, 15; anal rays II, 16 (15-17, usually 15 or 16); pectoral rays 18 (17-19, usually 18); lateral-line scales with tubes 17 (17-19); gill rakers on first arch $7 + 15 = 22$ ($6 + 7 + 13 + 16 = 19-23$, usually 19-21); teeth of jaws conical, biserial anteriorly; suborbital and preopercle strongly serrate; suborbital and preorbital scaleless; predorsal scales extending forward to level of nostrils; greatest body depth 1.9 (1.9-2.1), head length 3.4 (3.1-3.5), both in standard length; snout length 3.8 (3.8-4.3), eye diameter 2.8 (2.7-3.1), interorbital width 3.4 (3.0-4.1), least depth of caudal peduncle 1.9 (1.9-2.1), length of caudal peduncle 2.0 (2.0-2.5), of pectoral fin 0.9 (0.9-1.0), of pelvic fin 0.8 (0.8-0.9), of caudal fin (0.9-1.0), all in head length.

Colour in life: Variable according to locality. Specimens from the Great Barrier Reef and Melanesia generally light to charcoal grey with narrow streak of bright blue on each scale; head covered with numerous blue spots and narrow lines; a prominent black spot covering entire pectoral fin base and small indistinct dark grey spot at upper posterior corner of operculum; dorsal and anal fins grey with blue spots on basal sheath scales and series of light grey to tan stripes, outer edge of dorsal fin narrowly dark blue to black-



Figure 1. *Pomacentrus arenarius*, adult, photographed underwater at Madang, New Guinea.

ish; caudal fin tan to whitish with faint banding pattern that is usually broken giving overall speckled appearance; pectoral fins translucent, pelvic fins pale grey, often dusky on distal portion. Specimens from Western Australia are generally much lighter grey, nearly whitish over much of the side, with a very slight suffusion of yellow posteriorly; other markings on the head and fins are similar. The blackened area at the base of the pectoral fin is much reduced compared to Pacific specimens; it forms only a small dark wedge on the upper 1/3-1/2 of the fin base.

Colour in alcohol: Queensland and Melanesian specimens overall dark purplish-brown, scale centres slightly paler, also head and breast slightly paler than remainder of body; dorsal and anal fins dark brown with light grey stripes, these fins often whitish posteriorly with broken stripes forming speckled pattern; caudal fin more or less abruptly whitish with faint grey speckling; pectoral fins translucent with prominent black spot covering base and axil of fin. A juvenile (36 mm SL) specimen is similar but without speckling on

the caudal fin. It is further characterised by an ocellated black spot at the base of the posterior dorsal-fin rays. This spot is sometimes faintly visible in adults. Specimens from Western Australia are purplish-brown anteriorly becoming tan on the posterior one-third of the body. Other aspects of the coloration are similar to Pacific specimens except the black spot at the pectoral base is reduced to a small wedge-shaped mark superiorly and the axil of this fin is pale.

Distribution. Australia, Great Barrier Reef and Western Australia between North-west Cape and the Dampier Archipelago. Allen (1975) also recorded it as *Pomacentrus* sp. from the Indo-Malayan region, Palau Islands, New Guinea, New Britain, Solomon Islands, Vanuatu, Loyalty Islands and New Caledonia, Sri Lanka and in the Andaman Sea off Thailand.

Etymology. From the Latin *arenarius* (of sand) referring to the general habitat of this species.

Remarks. Pacific specimens are similar in general appearance to the sympatric *Pomacentrus philip-*

pinus, both having a black pectoral base and pale caudal fin. However, *P. philippinus* differs by having scales on the posterior part of the suborbital, 14 soft dorsal rays, and 23-24 gill rakers on the first arch. In addition, it is a reef crevice dweller compared to the open sandy habitat of *P. arenarius*.

I provisionally identify three lots of specimens from Sri Lanka (WAM P26513-003, 60 mm SL) and western Thailand (WAM P26506-013, 4: 52-80 mm SL and WAM P26508-006, 5: 54-82 mm SL) as *P. arenarius*. Although very similar in colour to Pacific *P. arenarius*, the blackened area at the pectoral base is reduced (as in specimens from Western Australia) and the juvenile ocellus persists in adult specimens. The most consistent

feature found in specimens from all geographic areas is the speckled pattern on the caudal fin (and also often on the posterior part of the dorsal and anal fins).

Pomacentrus arenarius inhabits lagoons, harbours, passages, and outer reef areas in about 3 to 35 m depth, usually in sandy habitats where there is shelter in the form of small coral heads, sponge, etc. It occurs solitarily or in small groups. The diet consists mainly of zooplankton which is taken within about 2 m of the substratum, although some benthic algae is also consumed.

Reference

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NEW AUSTRALIAN FISHES. PART 4.
A NEW SPECIES OF *STEENEICHTHYS* (PLESIOPIDAE)

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Abstract

Allen, G. R., 1987. New Australian fishes. Part 4. A new species of *Steeneichthys* (Plesiopidae). *Mem. Mus. Vict.* 48: 13-14.

A new species of plesiopid, *Steeneichthys nativitatis*, is described from Christmas Island, Indian Ocean, on the basis of a single specimen. It is similar to *S. plesiopsus* Allen & Randall from north-western Australia and the western Pacific, but differs in pectoral ray and gill raker counts, and also in coloration.

Introduction

The family Plesiopidae contains about 20 species in seven genera distributed mainly on Indo-west Pacific coral reefs, although *Trachinops* and *Paraplesiops* Bleeker containing eight species are mostly confined to southern Australian seas. Allen and Randall (1985) described *Steeneichthys plesiopsus* as a new genus and species from north-western Australia, Fiji and Samoa. This paper describes a second species of *Steeneichthys* collected on a recent expedition to Christmas Island. The holotype is deposited at the Western Australian Museum, Perth (WAM).

***Steeneichthys nativiatis* sp. nov.**

Figure 1

Material examined. Holotype: Christmas Island, Indian Ocean, near Smith Point (10°26'S, 105°40'E), 30-40 m, rotenone, G. Allen and R. Steene, 6 Jul 1986, WAM P29016-001 (24.5 mm SL).

Description. Dorsal fin rays IX, 9; anal fin rays III, 7; pelvic fin rays I, 4; pectoral fin rays 16; total gill rakers on first arch 12; scale rows from origin of lateral line to base of caudal fin about 24 (many scales missing); a single lateral-line scale with sensory tubule above upper edge of operculum; transverse scale series counted forward and upward from the second anal spine 9.

Measurements in mm (percent of standard length in parentheses): standard length 24.5; head length 9.5 (39); snout length 1.7 (7); maxilla

length 4.0 (16); eye diameter 3.1 (13); body depth at first dorsal spine 9.0 (37); predorsal length 9.5 (39); preanal length 16.7 (68); least depth of caudal peduncle 4.2 (17); pectoral fin length 5.0 (20); pelvic fin length 8.6 (35); length of dorsal fin base 12.0 (49); length of anal fin base 5.0 (20).

Colour when fresh: overall brown, centre of each scale darker forming series of dark brown stripes on side; dorsal, caudal, anal, and pelvic fins dark brown, all except pelvics with white margin, widest on dorsal fin; pectoral clear with brown edged rays.

Colour in alcohol: similar to live colouration after three months in preservative although there are large whitish areas on the head and body due to missing scales.

Distribution. Christmas Island, Indian Ocean.

Etymology. From *nativitas* (Latin) the nativity, referring to the type locality of Christmas Island.

Remarks. This species is similar to *Steeneichthys plesiopsus* Allen & Randall but differs by having 16 pectoral rays and 12 gill rakers on the first arch (17-18 and 10-11 respectively in *S. plesiopsus*). Furthermore, there are distinct colour differences between these species: *S. plesiopsus* has faint vertical bars on the head and body, *S. nativiatis* has narrow horizontal stripes; the dorsal, caudal, and anal fins have prominent light and dark bands in *P. plesiopsus* and are uniform brown in *P. nativiatis*.



Figure 1. *Steeneichthys nativitatis*, holotype WAM P29016-001, 24.5 mm SL, Christmas Island.

The holotype was collected in 30-40 m amongst rubble at the base of a vertical cliff that began in 6 m depth. It is likely that this species will be found at other Indian Ocean localities and may prove to be an allopatric "geminant" relative of the western Pacific (and Western Australia) *S. plesiopsus*. Because of their small size and cryp-

tic, deep-dwelling habits these fishes are seldom collected.

Reference

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NEW AUSTRALIAN FISHES. PART 5.
A NEW SPECIES OF *ACANTHURUS* (ACANTHURIDAE).

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Abstract

Allen, G.R. and Ayling, A.M., 1987. New Australian fishes. Part 5. A new species of *Acanthurus* (Acanthuridae). *Mem. Mus. Vict.* 48: 15-16.

A new species of surgeonfish, *Acanthurus albipectoralis* is described on the basis of two specimens collected on the Great Barrier Reef and Coral Sea. It is most similar to *A. mata*, but differs in colour, most notably that of the pectoral fins, which are blackish basally and abruptly white on the distal half.

Introduction

The surgeonfish family Acanthuridae contains 10 genera with about 78 species. Australia is represented by seven genera and 31 species, including a new *Acanthurus* which is described herein. The genus *Acanthurus* was revised by Randall (1956). Type specimens of the new taxon are deposited at the Queensland Museum, Brisbane (QM) and Western Australian Museum, Perth (WAM).

Acanthurus albipectoralis sp. nov.

Figure 1

Material examined. Holotype: Queensland, Swains Reefs, Great Barrier Reef (20°57'S, 152°15'E), 5 m, spear, A.M. Ayling, 13 Dec 1985, QM I.223541 (212 mm SL).

Paratype: Coral Sea Territory, W. side of West Herald Cay (17°00'S, 149°07'E), 20 m, spear, G.R. Allen, 17 Nov 1985, WAM P28537-001 (261 mm SL).

Description. (counts and proportions in parentheses refer to the paratype if different from holotype). Dorsal rays IX, 33; anal rays III, 23; pectoral rays 16 (17); gill rakers on first arch 5 + 9 + 14 (4 + 10 = 14); body oblong and laterally compressed, snout rounded; greatest body depth 2.3 (2.4), head length 3.8, predorsal distance 3.0, preanal distance 2.0 (2.1), length of dorsal fin base 1.5, of anal fin base 1.9 (2.2), all in standard length; greatest width of body 2.5 (2.8) in greatest depth; snout length 2.0, eye di-

ameter 4.0 (4.4), interorbital width 3.0 (2.8), length of maxillary 4.7 (5.3); least depth of caudal peduncle 3.1 (3.3), length of caudal peduncle 2.3; of pectoral fin 1.0, of pelvic fin 1.7 (1.8), of tallest dorsal fin ray 2.0 (2.1), of tallest anal fin ray 2.6 (2.7), of caudal spine 5.8, of caudal fin 0.9 (1.0); dorsal and anal fins relatively long and low, their posterior profiles, angular; caudal fin lunate with pointed tips; entire head and body covered with small ctenoid scales, those of head partially embedded; a shallow groove, about equal to eye diameter in length, present in front of eye; teeth of jaws uniserial, club-shaped or spatulate with serrated edges, about 20-24 in each jaw.

Colour in life, overall blackish including fins except outer half of pectorals white.

Colour in alcohol, overall dark brown including fins except outer half of pectorals white.

Distribution. Swains Reefs Queensland, and Herald Cays (Coral Sea Territory).

Etymology. From the Latin *albus* (white) and *pectoralis* (pectoral), referring to the distinctive fin coloration which is highly visible underwater and served to distinguish it from the similar *A. mata*.

Remarks. This species resembles *Acanthurus mata* Valenciennes which has a similar slender shape (compared to other *Acanthurus*) and is also a plankton feeder. The latter has usually been



Figure 1. *Acanthurus albipectoralis*, paratype (WAM P28537-001), 212 mm SL, Swains Reefs, Queensland.

referred to as *A. bleekeri* Günther but Randall (in press) has ascertained that *A. mata* is the correct name. They differ mainly in colouration. *Acanthurus mata* is generally brown overall with numerous fine bluish or purple striations on the sides. It has a prominent yellow area extending forward from the eye and pale pectoral fins. Both species were observed at Swains Reefs. *Acanthurus albipectoralis* was observed adjacent to steep outer reef drop-offs at depths between about 5

and 20 m. It was generally seen in aggregations containing about 5-30 individuals, which swam high above the bottom while apparently feeding on plankton.

References

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Randall, J.E., (in press). Three nomenclatorial changes in Indo-Pacific surgeonfishes (Acanthuridae). *Pacif. Sci.*

NEW AUSTRALIAN FISHES. PART 6.
NEW SPECIES OF *LEPIDOTRIGLA* (TRIGLIDAE),
CHOERODON (LABRIDAE) AND *ZEBRIAS* (SOLEIDAE)

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Abstract

Gomon, M.F., 1987. New Australian fishes. Part 6. New species of *Lepidotrigla* (Triglidae), *Choerodon* (Labridae) and *Zebrias* (Soleidae). *Mem. Mus. Vict.* 48: 17-23.

The following new species are described: *Lepidotrigla spinosa*, confined to the southern coast of Australia, *Choerodon sugillatum*, restricted to northern Australia, and *Zebrias penescalaris*, distributed off the central and western portions of Australia's south coast. A replacement name, *Zebrias scalaris*, is proposed for *Zebrias fasciatus* (Macleay), a junior homonym of *Zebrias fasciatus* (Basilevsky). The former is confined to eastern and south-eastern Australia and is closely related to the allopatric *Zebrias penescalaris*.

Introduction

Studies on the faunal composition of temperate Australian waters have revealed numerous taxonomic problems associated with fishes occurring there. Not the least of these is the discovery of a number of undescribed taxa. This paper provides names for two species of the families Triglidae and Soleidae and rectifies a problem of homonymy existing in a third, Soleidae. In addition, a new species of labrid is described from northern Australia. All of these species have been treated or soon will be treated in popular books. Methodology for accounts of species in the families Triglidae and Soleidae is primarily that of Hubbs and Lagler (1947). The labrid account follows methods given in Gomon (1974). Type specimens are lodged in the Australian Museum, Sydney (AMS), CSIRO, Division of Fisheries Research, Hobart (CSIRO), Museum of Victoria, Melbourne (NMV), South Australian Museum, Adelaide (SAMA), National Museum of Natural History, Washington, D.C. (USNM), and Western Australian Museum, Perth (WAM).

Triglidae

***Lepidotrigla* Günther**

Lepidotrigla Günther, 1860: 196.

Type species. Trigla aspera Cuvier, in Cuvier and Valenciennes, 1829 (subsequent designation by Jordan, 1919: 296).

Discussion. *Lepidotrigla*, as currently recognised, is by far the largest genus in the family. Richards and Saksena (1977) pointed out that further studies of the family on a world-wide basis may redefine genera, affecting species currently assigned to *Lepidotrigla*. Until this has been done, nomenclatural stability is best maintained by retaining this catch-all genus.

Recent authors, including Gloerfelt-Tarp and Kailola (1984) and Sainsbury et al. (1985) have treated several tropical species referred to this genus as having uncertain status. Although these species do not appear to represent forms described from Australian waters, it is premature to recognise them as new without comparing them with species described from other tropical Indo-Pacific waters. Because of the magnitude of this task, such comparisons have not yet been completed. On the other hand, comparison of subtropical and temperate Australian species with the few forms occurring in similar conditions elsewhere leaves little doubt that they are endemics. An ongoing study aimed at differentiating all fish species occurring in waters of Australia's southern coast has revealed the

presence of the following undescribed species.

***Lepidotrigla spinosa* sp. nov.**

Figure 1

Material examined. Holotype: Western Australia, Albany (35°00'S, 117°52'E), 38-45 m, P.R. Last, 5 Mar 1986, FV "Nörn-alup", NMV A3728 (83.5 mm SL).

Paratypes: Western Australia. Type locality, NMV A3730 (3 specs., 75.6-87.9 mm SL). Western end of Great Australian Bight (32°42'S, 125°48'E), 54 m, S03/81/17, FRV "Soela", 31 Jul 1981, SAMA A791 (5 specs., 95.1-103 mm SL).

South Australia. South of Head-of-Bight (32°16.3'S, 131°23.6'E), 60-61 m, S05/81/56, FRV "Soela", 7 Dec 1981, NMV A2893 (87.1 mm SL). Same area (32°15.4'S, 131°22'E), 62 m, S05/81/54, FRV "Soela", 7 Dec 1981, NMV A2860 (87.1 mm SL); (32°13.4'S, 131°22.2'E), 60 m, S05/81/53, FRV "Soela", 7 Dec 1981, NMV A2877 (83.3 mm SL). Anxious Bay, (33°28'S, 134°48'E), P.C. Haffey, 25 Feb 1981, SAMA A101 (96.1 mm SL). 15.4-18.8 km (10.5-8.6 miles) off Emu Bay, Kangaroo Island, (35°25'S, 137°35'E), I. Brown, April-May 1981, SAMA A1121 (4 specs., 94.2-99.5 mm SL).

Description. Dorsal-fin rays IX, 14-15 (IX, 14 in holotype). Anal-fin rays 14-15 (14 in holotype). Lateral-line scales 51-57 (57 in holotype). Profile of snout in front of eyes nearly straight. Interorbital moderately depressed. Shallow but distinct transverse groove above and behind each eye,

grooves not meeting on dorsal midline of head. Snout rostrum in most specimens nearly truncate when viewed from above, but with slight medial notch, each side with several moderately small spines, none usually markedly larger than others. Scales small, ctenoid, firmly attached, covering all of body except chest and anterior portion of belly. Lateral-line scales slightly enlarged, each with 1 or more prominent spines; spines best developed on posterior lateral-line scales. Pectoral-fin tip reaching to above base of third or fourth anal-fin ray, distinctly short of pelvic-fin tip, except in very small specimens. Reaches a total length of at least 125 mm.

Reddish above, white below. More or less prominent black spot on dorsal fin between fourth and seventh spines. Dorsal surface of pectoral fin dark between second and sixth or seventh rays, leading edge of fin pale except for dusky blotch distally, distal edge narrowly pale, inner margin between last 3 or 4 rays pale.

Distribution. Off southern Australia between Kangaroo Island, South Australia and Albany, Western Australia, at depths of 30-80 m.

Etymology. From the Latin, *spinosa* (thorny), in

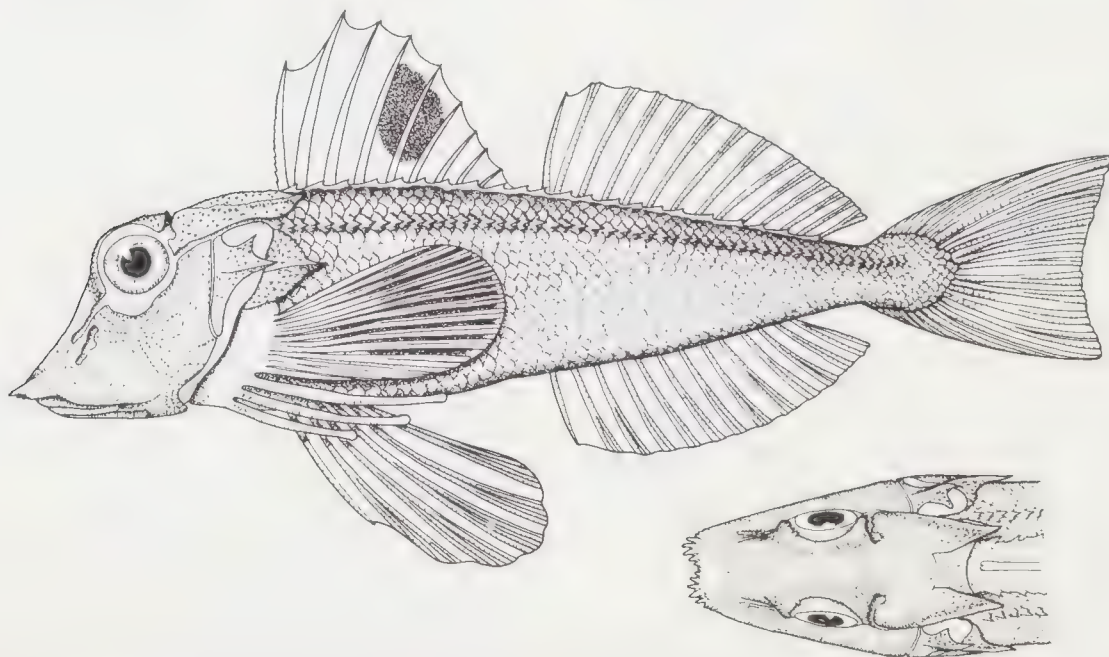


Figure 1. *Lepidotrigla spinosa* sp. nov., paratype, SAMA A101, 96.1 mm SL; insert shows dorsal view of head.

reference to the prominent spine bearing lateral-line scales characteristic of this species.

Remarks. This species is remarkably close to *Lepidotrigla umbrosa* Ogilby, 1910, which is confined to northern New South Wales and southern Queensland. The two share similar ranges of meristic values, although lateral-line scale counts in *L. spinosa* appear to be slightly lower than in *L. umbrosa*. The former may be distinguished from the latter by its rather truncate rostrum in dorsal view, the medial notch being very shallow. Rostral spines are usually subequal in this species and somewhat symmetrically arranged around each rostral lobe. *Lepidotrigla umbrosa*, on the other hand, has a deep notch in the rostrum, the rostral lobes often slightly splayed outwards. The latter species usually has a prominent spine at the outer corner of each rostral lobe with spines becoming progressively smaller toward the centre of the rostrum. The pectoral fins also appear to differ between the species, with *L. spinosa* having a slightly shorter fin which reaches only to above the base of the third or fourth anal-fin ray and less pigmentation on the upper surface. The pectoral fin in *L. umbrosa* reaches to above the base of the fifth or sixth anal-fin ray and has a very narrow pale margin along the leading edge, a rather broad pale margin along the distal edge and a narrow pale margin along the inner edge, the last spanning only about two rays.

Both of these species are easily distinguished from sympatric congeners by the following combination of characters: ctenoid scales, spines on lateral-line scales, prominent black spot in the first dorsal fin and distinct rostral spines. They appear to be most closely related to *L. papilio* Cuvier, 1829, of southern Australia, with which they share the first three features.

Labridae

Choerodon Bleeker

Choerodon Bleeker, 1847: 10.

Type species. *Labrus macrodontus* Lacepède (= *C. anchorago* Bloch) by monotypy.

Discussion. As indicated by Gomon and Allen (1987), prior to this publication two undescribed species of *Choerodon* were known from Aus-

tralian waters. One is described here.

Choerodon sugillatum sp. nov.

Choerodon sp. 2 Gloerfelt-Larp & Kailola, 1983: 235, colour figure on opposing page.

Choerodon sp. 2 Sainsbury, Kailola & Leyland, 1984: 260, colour figure on opposing page.

Choerodon sp. Allen, 1985: 2408, fig. 334.

Material examined. Holotype: Queensland, Cape Bedford (15°13.59'–15.00'S, 145°23.36'–27.87'E), 30 m, trawl, FV "Gwendoline May", C.C. Lu, 1 Mar 1983, NMV A3126 (104 mm SL).

Paratypes: Queensland, Lizard Island area (14°40'S, 145°27'E), staff of Australian Museum and Australian Institute of Marine Sciences, 8 Feb 1979, AMS L.20751-006 (8 specs., 59.2–97.8 mm SL), USNM 280628 (4 specs., 64.2–84.0 mm SL). Lizard Island area, Mrs Watsons Bay (14°40'S, 145°27'E), Australian Museum party, Nov, 1975, AMS L.19450-037 (3 specs., 36.2–66.5 mm SL). Cape Tribulation (16°09.46'–12.17'S, 145°33.23'–36.06'E), 30 m, trawl, FV "Gwendoline May", C.C. Lu, 1 Mar 1983, NMV A3137 (97.2 mm SL). Cape York, staff of Australian Museum and Australian Institute of Marine Sciences, 18 Feb 1979, AMS L.20771-066 (2 specs., 87.8–104 mm SL). Gulf of Carpentaria (12°37'S, 140°57'E), CSIRO, 19 Apr 1964, 116 mm SL, AMS L.15557-206 (116 mm SL). 180 km west of Cape York (10°50.23'–48.01'S, 140°55.11'–55.68'E), 44 m, trawl, FV "Gwendoline May", C.C. Lu, 26 Feb 1983, NMV A3130 (3 specs., 81.2–99.2 mm SL).

Western Australia, North-west Shelf (20°46'–48'S, 115°59'–116°00'E), 19–22 m, FRV "Soela", CSIRO, 1 Dec 1979, CSIRO H656-01 (141 mm SL). Same area (20°00'–03'S, 115°57'–58'E), 78–80 m, FRV "Soela", CSIRO, 2 Dec 1979, CSIRO H657-01 (35.3 mm SL), CSIRO H657-02 (50.6 mm SL). Same area (19°45'–47'S, 116°33'–35'E), 60–64 m, FRV "Soela", CSIRO, 4 Dec 1979, CSIRO H658-01 (96.1 mm SL). Monte Bello Islands (20°25'S, 115°30'E), Australian Government, Apr 1975, WAM P25354-023 (6 specs., 133–149 mm SL).

Description. Dorsal-fin rays XII, 8; anal-fin rays III, 10; pectoral-fin rays ii, 13–14 (holotype with 13; 13 in 55 of 58 fins examined); lateral-line scales 27 + 2; predorsal scales 5–7 (6 in holotype; modally 6); scales above lateral line 3–3 1/2 (3 in holotype). Body and head shallow, becoming moderately deep in large adults, body depth 26.6–37.1% (31.0% in holotype) % SL. Eye large. Predorsal scales reaching forward to above mid-point between hind margin of eye and hind edge of preopercle. Cheek scales reaching forward to below anterior extent of orbit; moderately narrow naked margin along free edge of preopercle; subopercle with 5–9 uniserial scales reaching forward to below centre of eye. Lateral-line scales usually without accessory branches associated with sensory pore. Upper jaw with two pairs of prominent ventrally directed canines anteriorly,

anteriormost about twice the size of second; upper jaw without posterior canines. Lower jaw with two pairs of prominent anterior canines, anteriormost much smaller than second; second pair strongly curved laterally. Caudal fin broadly wedge-shaped, upper and lower corners each produced into slight lobe. Pectoral fin rather pointed dorsoposteriorly, with lower ray produced, giving hind margin of fin lunate appearance. Reaches a length of at least 175 mm TL.

Juveniles pale with narrow dusky midlateral stripe on sides extending from opercular margin onto caudal fin; small triangular dark mark extending from lateral stripe above pectoral-fin base toward lateral line.

Initial and terminal phase individuals pale with hazy angled dark slash on side about midway between pectoral-fin base and dorsal profile of side; small dark spot at upper end of pectoral-fin base and short narrow dark mark near centre of hind margin of caudal-fin.

Life colours of juveniles olivaceous with brownish blotches above, white below, areas separated by brown stripe just above lateral midline; lateral stripe with vertical black mark anteriorly bordered with blue positioned above and slightly behind pectoral-fin base; stripe edged with blue on head, two additional blue lines directed forward from eye across snout. Fins transparent except for two olivaceous stripes in dorsal fin and two blue stripes in anal fin; pectoral-fin base with broad blue band.

Initial phase coloration similar to that of juveniles except dorsal coloration uniformly olivaceous, scale centres blue, at least posteriorly, yellow streaks between scale rows on caudal peduncle, brown lateral stripe narrower on sides, blue margin along black mark on side and blue band on pectoral-fin base broad and intense, latter thinly outlined with yellow, blue lines on head similarly bordered with yellow, two additional lines across snout and forehead, short blue line directed posteriorly from both top and bottom of eye, lower line turning ventrally anteroventral to eye and directed onto chin, lower lip blue, and blue stripe directed horizontally from lower jaw to hind edge of preopercle. Dorsal and anal fins blue, dorsal fin with thin yellow longitudinal lines proximally and distally, anal fin with thin yellow

longitudinal lines proximally and centrally. Caudal fin blue with posteriorly converging yellow lines, lines edged with black posteriorly at centre of rear margin of fin.

Terminal phase coloration apparently as in initial phase individuals, with lateral brown stripe on sides narrower.

Distribution. Confined to northern Australia, extending at least from Cape Tribulation, Queensland to the Monte Bello Islands, Western Australia.

Etymology. From the Latin *sugillatum* (black and blue spot), in reference to the characteristic marking on the side of this species.

Remarks. *Choerodon sugillatum* is a member of a natural assemblage of at least five species. Representatives of the group are distinguishable from other congeners by their prolonged lower pectoral-fin rays. These species also have a generally shallower and more streamlined body than most other tuskfish and share a dorsal-fin count of XII, 8 with only four other species in the genus. The assemblage, treated as *Pealopesia* Smith, 1953, or *Choerodonoides* Kamohara, 1958, by some authors, is referred to *Choerodon* until further evidence shows otherwise. A revisionary study, is currently underway.

All species in this assemblage have nearly identical meristic values. Differences are primarily in body form and coloration. *Choerodon sugillatum* has the deepest and most compressed body of the complex, at least in terminal phase adults. It differs from all other species most noticeably in having a prominent black and blue, slash-like mark on the upper side above and behind the pectoral-fin base. The only other species of this complex known to occur in Australian waters is that described by Kamohara (1958) as *Choerodonoides japonicus*. The only known specimen of this species from Australian waters was collected off Shark Bay, Western Australia. When compared with *C. sugillatum*, this species has a more slender and robust body. It also has a pearly stripe just above the lateral midline of the sides extending from the base of the caudal fin to the lower side of the eye and curving ventrally to the upper jaw. The species is also known from Japan and Taiwan.

Soleidae***Zebrias* Jordan & Snyder**

Zebrias Jordan & Snyder, 1900: 380.

Type species. *Solea zebrina* Temminck & Schlegel, 1850 (= *Pleuronectes zebra* Bloch, 1788) by original designation.

Discussion. Species belonging to the *Zebrias* group (Chabanaud, 1934), combine to form a distinctive, monophyletic assemblage which has been variously split into a number of genera and subgenera. Although generic limits have continued to change due to the subjectivity of authors treating these species (e.g., McCulloch, 1916; Chabanaud, 1930), there appears to be a consensus that *Solea fasciata* Basilewsky, 1855, and *Synaptura fasciata* Macleay, 1882, represent closely related, but distinct species that are referable to one genus regardless of criteria used. If generic lines were drawn to place these species in separate genera, each of the resultant groupings would contain at the most two species. Assuming that this action is not taken the latter species name is a junior homonym of the former and as no other names have been proposed for this species, a replacement name is required. The following treatment presents a name and diagnosis for this taxon. In addition, a description of a closely related but previously unrecognised species restricted to central and western portions of Australia's southern coast is provided. All three of these species are referred to the genus *Zebrias*. In the following descriptions, lateral-line scales are counted from directly above the gill opening to the posterior edge of the hypural bones.

***Zebrias scalaris* nom. nov.**

Synaptura fasciata Macleay, 1882: 14 (type locality—Port Jackson, New South Wales).—McCulloch, 1916: 61, pl. VIII, fig. 2.

Brachirus fasciatus.—Norman, 1926: 295.

Zebrias fasciatus.—Chabanaud, 1930: 16-17.

Haplozebras fasciatus.—Chabanaud, 1943: 292.

Material examined. Queensland. Off Moreton Island, NMV A2787 (117 mm SL).

New South Wales. Botany Bay, AMS I.23455-001 (140 mm SL). Jervis Bay, AMS I.16892-001 (160 mm SL), AMS I.19392-005 (148 mm SL).

Tasmania. South-southeast of Flinders Island, NMV A1564 (133 mm SL).

Victoria. Bass Strait, off Lake Tyers, NMV A3203 (163 mm SL), NMV A3244 (47.9 mm SL); off Lakes Entrance, NMV A3750 (123 mm SL); off Cape Woolamai, NMV A3751 (103 mm SL).

Diagnosis. Dorsal-fin rays 75-82 (mean 78.4, 8 of 9 specimens with 76-82); anal-fin rays 60-69 (mean 65.6); pectoral-fin rays 6-7; lateral-line scales 74-86 (mean 82, 8 of 9 specimens with 79-86). Eyes separated by narrow scaly, interorbital space. Pectoral fins rudimentary, contiguous with opercular membrane to form short tubular structure, of similar size and form; length of rays less than half eye diameter. Reaches a length of 200 mm.

Pale with 16-24 parallel darker bands crossing body and base of caudal fin, bands of equal breadth or slightly narrower than interspaces and usually distinct, though not sharply demarcated from interspaces.

Distribution. South-eastern Australia from Morton Bay, Queensland to Flinders Island, Tasmania and Cape Woolamai, Victoria.

Etymology. From the Latin *scalaris* (of a ladder), in reference to the rung-like bands traversing the body in this species.

Remarks. This species is easily separable from all other members of the genus, except for the representative treated below, on the basis of colour pattern. It is close to, but clearly distinct from *Zebrias fasciatus* (Basilewsky) as pointed out by Ochiai (1963). For a more detailed account and comparison with other Australian congeners (treated as *Synaptura*) see McCulloch (1916).

Variability among examined specimens of this species does not appear to relate to collection localities and thus can not be attributed to environmental factors.

***Zebrias penescalaris* sp. nov.**

Material examined. Holotype: South Australia, Anxious Bay, (33°28'S, 134°48'E), 55 m (30 fms), T. Holder, 25 February 1981, SAMA A96 (113 mm SL).

Paratypes: South Australia, Investigator Strait (35°20'S, 137°50'E), 20 m, over mud and sponges, prawn trawl, H. Larson and D. Blake, 14 Mar 1978, AMS I.20194-029 (7 specs., 106-123 mm SL). 9.7 km (6 miles) off Venus Bay, (33°15'S, 134°30'E), 33-46 m (18-25 fms), T. Olsen, Jun 1982, SAMA A1662 (118 mm SL). 6.9 km (4.3 miles) south-east of Evans Island (32°25'S, 133°30'E), 43 m, T. Olsen, SAMA A6554 (2 specs., 94.3-111 mm SL). 4.8 km (3 miles) south of Evans Is-

land, 40 m (22 fms), K. and T. Olsen, 14 Apr 1982, SAMA A1085 (4 specs., 98.0-110 mm SL). South-east of Evans Island, near Ceduna, T. Olsen, c. 1 Jun 1982, SAMA A1697 (105 mm SL).

Western Australia. Off Albany (35°00'S, 117°52'E), 38-45 m, trawled, FV "Nornalup", P.R. Last, 5 Mar 1986, CSIRO H572-03 (115 mm SL).

Description. Dorsal-fin rays 70-80 (mean 73.4, 16 of 17 with 70-76; holotype with 75); anal-fin rays 60-67 (mean 64.1; holotype with 67); pectoral-fin rays 6-7 (holotype with 6); lateral-line scales 67-76 (mean 71.9; 72 in holotype). Eyes separated by narrow scaly, interorbital space. Pectoral-fins rudimentary, contiguous with opercular membrane to form short tubular structure, of similar size and form; length of rays less than half eye diameter. Reaches a length of 150 mm.

Eyed side dusky with 16-22 (approximately 20 in holotype) faintly darker parallel bands crossing body and base of caudal fin, bands of equal breadth or slightly narrower than interspaces and difficult to distinguish from interspaces; blind side pale. Dorsal and anal fins dusky to dark with narrow pale margin on both sides.

Distribution. Southern coast of Australia from at least Kangaroo Island, South Australia to Albany, Western Australia.

Etymology. From the Latin *pene* (almost or near) and *scalaris* (of a ladder), in reference to the close relationship of this species to the previously treated congener.

Remarks. This species is very similar to *Zebrias scalaris*, the two undoubtedly having arisen from a recent common ancestor. Both species are separable from other members of the genus, as defined by Chabanaud (1934), in having the following combination of characters: eyes that are adjacent one another but with a scaly interorbital space, rudimentary pectoral fins that are joined to the respective opercular membranes to form a short tube on each side that is shorter than half the diameter of the eye, all rays in the dorsal and anal fins unbranched and numerous ill-defined parallel bands crossing the body on the eyed side. The new species is separable from *Z. scalaris* in having fewer lateral-line scales (67-76, versus 79-86 in the latter; one specimen of the latter with 74), generally a lower number of dorsal-fin rays (70-76, versus 75-82 in the latter;

one specimen of the former with 80), and less definition in the body banding.

The possibility that clinal variation may be responsible for the observed differences between *Z. scalaris* and *Z. penescalaris* has been ruled out as there were no observed shifts in morphometric values associated with specimen distribution in either population. Although there are some variations in the colour patterns present in both species, the pattern is much more obscure in the latter. This difference does not appear to coincide with local conditions.

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NEW AUSTRALIAN FISHES. PART 7.
A NEW SPECIES OF *CHOERODON* (LABRIDAE).

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Abstract

Gomon, M.F. and Alalen, G.R., 1987. New Australian fishes. Part 7. A new species of *Choerodon* Labridae). *Mem. Mus. Vict.* 48: 25-26.

A description of a new tuskfish *Choerodon cauteroma*, restricted to north-western Australia, is presented. It is distinctive in having a relatively deep body and prominent black mark on the upper portion of the side below the seventh dorsal spine.

Introduction

Recent field studies and revisionary treatments of Australian taxa have differentiated a number of undescribed labrid fishes. Separate concurrent studies by the two authors identified the species of *Choerodon* treated below as new. Methods for this description follow Gomon (1974).

Labridae *Choerodon*

Choerodon Bleeker, 1847: 10.

Type species. Labrus macrodontus Lacepède (= *C. anchorago* Bloch) by monotypy.

Discussion. *Choerodon* is a large, morphologically diverse genus with general body configurations varying from slender and streamlined to quite deep-bodied. An unpublished study of this genus and related genera undertaken by the first author has revealed the presence of two undescribed species of *Choerodon* that appear to be restricted to northern Australian waters. Both have been cited in recent works treating, at least in part, Australia's North-west Shelf. A description of one of these species is presented below.

Choerodon cauteroma sp. nov.

Choerodon sp. 1 Gloerfelt-Tarp & Kailola, 1983: 235, colour figure on opposing page.

Choerodon sp. 1 Sainsbury et al., 1984: 260, colour figure on opposing page.

Choerodon sp. Allen, 1985: 2406, figs. 330, 331.

Material examined. Holotype: Western Australia, Exmouth Gulf, collected by J.B. Hutchins, 6 Dec 1975, WAM P25508-042 (terminal phase adult, 203 mm SL).

Paratypes: Western Australia, Dampier Archipelago (20°28.5'S, 116°32'E), J.B. Hutchins, 24 Nov 1974, WAM P24259 (initial phase, 195 mm SL). North-west Shelf (20°46'-48'S, 115°59'-116°00'E), 19-22 m, FRV "Soela", collected by CSIRO, 1 Dec 1979, CSIRO H659-01 (initial phase, 176 mm SL). Exmouth Gulf, M. Lane, Oct 1974, WAM P25095-038 (initial phase, 6 specs., 98.3-144 mm SL). Off Exmouth Yacht Club, 4-5 m, spear, G.R. Allen, 1 Jul 1975, WAM P25372-001 (initial phase, 3 specs., 90.2-104 mm SL). Shark Bay, R.J. McKay, 8 Jul 1962, AMS L26373-001 (initial phase and terminal phase, 2 specs., 130-205 mm SL), NMV A3819 (initial phase and terminal phase, 4 specs., 114-208 mm SL), USNM 280629 (initial phase and terminal phase, 2 specs., 115-158 mm SL). Same area, Poole Bros., May 1964, BPBM 30944 (initial phase, 110 mm SL).

Other material: Western Australia, Elphicks Knob (20°28'S, 116°37'E), collected by R.J. McKay, 26 Nov. 1971, WAMP 23092-4 (3 juveniles, 20.5-40.2 mm SL).

Description. Dorsal-fin rays XIII, 7; anal-fin rays III, 10; pectoral-fin rays ii, 15-16 (ii, 15 in holotype; ii, 15 in 37 of 40 fins counted); lateral-line scales 27+2; predorsal scales 5-8 (5 in holotype; modally 6); scales above lateral line 4-4 1/2 (4 in holotype). Body and head deep, body depth 36.3-43.0 (37.3 in holotype). Eye large. Predorsal scales reaching forward to above hind edge of preopercle. Cheek scales reaching forward to

below anterior extent of orbit; broad naked margin along free edge of preopercle; subopercle with 1-5 scales in a mostly uniserial patch dorsally. Lateral-line scales with several anastomosing branches associated with sensory pores. Upper jaw with two pairs of prominent ventrally directed canines anteriorly, anteriormost much larger than second; small recurved canine sometimes present (present in holotype) at corner of mouth. Lower jaw with two pairs of prominent anterior canines, anteriormost much smaller than second and directed anterodorsally; second pair strongly curved laterally. Caudal fin mostly truncate with upper and lower corners produced into short lobe. Dorsoposterior corner of pectoral fin distinctly pointed, fin broadly rounded below. Reaches a length of at least 280 mm TL.

Juveniles (based on three specimens, WAM P.23092-4, tentatively identified as this species) pale with four faint dusky bands or vertically elongate blotches on sides; darker spot about half diameter of eye on lateral line below seventh dorsal-fin spine; fins pale, dusky blotches in dorsal and anal fins opposite ends of bands crossing sides and dark spot in dorsal fin above third band in very small individuals.

Initial phase pale with faint dusky stripes posteriorly on sides following horizontal scale rows; broad dark slash on side between base of seventh dorsal-fin spine and lateral line; head with pair of narrow dusky lines crossing snout in front of eyes, similar pair of dusky lines directed posteriorly from each eye, third pair curved posteroventrally from eye across operculum, fourth pair curved anteroventrally from eye to mouth, pair of short dusky marks directed ventrally from mouth on each side and hazy dusky streak angled posteroventrally from cheek; dorsal fin with broad horizontal dark streak distally between first three spines; dorsal and anal fins with two horizontal series of dusky spots, inner series in each fin conjoined to form stripe anteriorly; caudal fin occasionally with one or two vertical series of dusky spots.

Terminal phase similar to primary phase but with dark mark dorsally on side reduced to spot of pupil size; lines on head, except for those across snout, those directed postero-ventrally

from eye, and streak across cheek, less prominent; spot anteriorly on dorsal fin intense.

Life colours of initial and terminal phase adults olivaceous above, yellow to white below with above-mentioned lines and spots, except for blue-edged black spot on side, black spot anteriorly in dorsal fin and brownish streak across cheek, bright blue; centres of scales anteriorly on sides bright blue; space between pair of blue lines directed posteroventrally from eye brownish; base colour of fins bright yellow; broad blue stripe along basal edge of pectoral fin rays; pelvic fin with one or more longitudinal blue stripes.

Distribution. North-western Australia, extending at least from the Dampier Archipelago to Shark Bay.

Etymology. From the Latin *cauteroma* (brand), in reference to the characteristic brand-like mark dorsally on the sides of the body in this species.

Remarks. This is a distinctive species of tuskfish which most closely resembles its deep-bodied congeners that have thirteen spines and subopercular scales restricted to the dorsoposterior corner of the exposed subopercular surface. The prominent black mark on the upper portion of the side below the seventh dorsal-fin spine, the black mark at the leading end of the dorsal fin and 15 (rarely 16) segmented pectoral-fin rays easily distinguish it from these relatives.

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NEW AUSTRALIAN FISHES. PART 8.
A NEW SPECIES OF *AULOTRACHICHTHYS* (TRACHICHTHYIDAE)

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Abstract

Gomon, M.F. and Kuitert, R.H., 1987. New Australian fishes. Part 8. A new species of *Aulotrachichthys* (Trachichthyidae). *Mem. Mus. Vict.* 48: 27-29.

Aulotrachichthys, presented by Fowler (1938) as a subgenus of the trachichthyid *Paratrachichthys*, is here recognised as a separate genus. A new species, *Aulotrachichthys pulsator*, from South Australian waters, is described. It is distinguishable from other congeners by various combinations of its body form, eye size, extent of striated tissue and meristic values.

Introduction

Nine species of roughy, family Trachichthyidae, are currently placed in the genus *Paratrachichthys* Waite, 1899 (Gon, 1983; Kotlyar, 1980). These species are separable into two natural groups on the basis of the presence or absence of striated luminous tissue on the head, pectoral-fin base and lower portion of the sides. The two groups are here recognized as distinct genera. *Paratrachichthys*, which lacks striae, comprises two described species, and *Aulotrachichthys* (Fowler, 1938), which has striae, comprises seven described species. During a collecting trip to the Investigator Group of islands at the eastern end of the Great Australian Bight, the second author acquired a series of a distinctive undescribed species referable to this genus. The species is the shallowest dwelling member of the genus known to date. Type specimens are lodged in the Museum of Victoria (NMV) and the South Australian Museum (SAMA).

***Aulotrachichthys* Fowler**

Paratrachichthys (*Aulotrachichthys*) Fowler, 1938: 40.

Type species. Paratrachichthys latus Fowler, 1938, by original designation.

Discussion. *Aulotrachichthys* has been consistently regarded as a subgeneric taxon, as originally proposed, or ignored by authors treating

species referable to it. A recent examination of the closely related, but distinctive *Sorosichthys ananessa* Whitley, 1945, revealed the presence of striated luminous tissue in the same configuration as found in species referable to *Aulotrachichthys*. In addition, *S. ananessa* has the anus positioned between the bases of the pelvic fins as do the nine species currently in *Paratrachichthys*, but unlike all other trachichthyids. As the striated tissue is a unique structure unlikely to have evolved independently in *Sorosichthys* and those species referable to *Aulotrachichthys*, it is hypothesized that the two groups share an immediate common ancestry which excludes species currently placed in *Paratrachichthys* without striae. *Aulotrachichthys* is therefore regarded as a generic taxon closely related to *Paratrachichthys* and *Sorosichthys*. *Aulotrachichthys* is most easily separable from *Paratrachichthys* by the diagnostic characters given by Fowler in his original description, "the presence of the subcutaneous silvery-grey striated tubes and areas along lower surface of body". In other aspects, the two genera are very similar.

***Aulotrachichthys pulsator* sp. nov.**

Figure 1

Material examined. Holotype: South Australia, Investigator Group, Topgallant Island (33°43'S, 134°38'E), 25 m, rocky reef, rotenone, R.H. Kuitert, 1 Apr 1982, NMV A3726 (64.3 mm SL).

Paratypes: Collected with holotype, NMV A3727 (14 specs.,

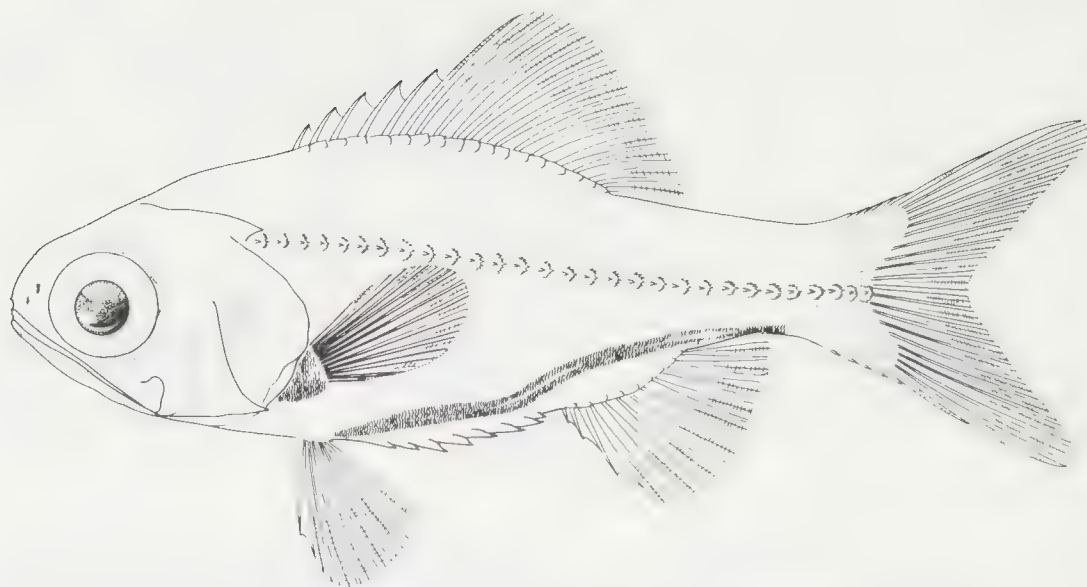


Figure 1. *Aulotrachichthys pulsator* sp. nov., holotype, NMV A3726, 64.3 mm SL, scale detail omitted.

35.1-65.1 mm SL); SAMA F5490 (64.0 mm SL).

Description. Dorsal-fin rays V, 13. Anal-fin rays II, 9. Lateral-line scales 28. Belly scutes 8-9 (9 in holotype). Gill rakers 5-7+1+11-13=17-21 (usually 6+1+12, 6+1+12 in holotype). Body moderately shallow, body depth at dorsal-fin origin 33-35% (34% in holotype) SL, dorsal and ventral profiles nearly symmetrical. Eye large, horizontal diameter 35-39% (35% in holotype) head length, placed almost midlaterally on head. Striated silvery tissue extending posteriorly from each pelvic-fin base along ventral profile of sides nearly to caudal-fin base. Dorsal-fin spines becoming progressively and distinctly longer posteriorly, only second and third subequal; first three segmented rays likewise becoming progressively longer and subsequent rays becoming progressively shorter; profile of dorsal-fin broadly triangular. Reaches a total length of at least 80 mm.

In life, brownish on back, silvery below, with golden hue. Fins whitish, with brownish tint basally on caudal-fin lobes.

Distribution. Known only from rocky reefs at depths of 25 m off Topgallant Island, South Australia.

Etymology. From the Latin, *pulsator* (striker or beater), in reference to the ability of this species to make click-like sounds when disturbed.

Remarks. This species is the most streamlined and shallow dwelling member of the genus. No others have been taken at depths of less than 50 m, and most occur in waters of more than 100 m. Unlike many congeners whose ventral profile is noticeably more deeply rounded than the dorsal profile at large adult sizes, the opposing profiles of the body in this species at this stage are virtually mirror images of one another. In addition, the very large eye appears to be placed slightly closer to the lateral midline of the head than in most other species. *Aulotrachichthys pulsator* differs markedly in these respects from the other Australian member of the genus occurring off the eastern coast. The latter is very similar in appearance to *A. novaezelandicus* Kotlyar, 1980, known only from New Zealand waters. However, the identity of the eastern Australian species cannot be made conclusively with information at hand. Obvious differences between the two Australian species include the presence of an additional segmented anal-fin ray, a proportionately shallower body and larger eye in *A. pulsator*.

Acknowledgements

We thank Rhyllis J. Plant for preparing the illustration of the new species.

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NEW AUSTRALIAN FISHES. PART 9.
A NEW SPECIES OF *KATHETOSTOMA* (URANOSCOPIDAE).

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Abstract

Gomon, M.F. and Last, P.R., 1987. New Australian fishes. Part 9. A new species of *Kathetostoma* (Uranoscopidae). *Mem. Mus. Vict.* 48: 31-33.

A new species of stargazer, *Kathetostoma canaster*, is described from the southern coast of Australia. It has been confused with the sympatric *K. laevis* and the New Zealand *K. giganteum*, but differs from both in details of colour pattern and meristic values.

Introduction

Scott (1974, 1980) recorded *Kathetostoma giganteum* Haast, 1873, until then regarded as a strictly New Zealand stargazer, from Tasmanian waters. A comparison of southern Australian specimens which match Scott's accounts with examples of *K. giganteum* from New Zealand indicates that the populations inhabiting the two countries are not conspecific. A description of this new Australian species is presented below, bringing the number of Australian representatives of the genus to three. All are Australian endemics. This treatment stems from an ongoing study of temperate Australasian taxa of the family Uranoscopidae. Type specimens are deposited in the Australian Museum, Sydney (AMS), CSIRO Division of Fisheries Research, Hobart (CSIRO) and Museum of Victoria, Melbourne (NMV).

Kathetostoma

Kathetostoma Günther, 1860: 274.

Type species. Uranoscopus laevis Bloch & Schneider, 1801 (by monotypy.)

Discussion. Although Australasian representatives of this genus have been considerably confused in the literature (see Mees, 1960: 55), the species are distinctive and can be diagnosed. Variable characters include numbers of rays in the dorsal and anal fins, configuration of the bony

ornamentation on the head, colouration, and relative proportions of the body, such as eye size, length of teeth, body width and body length. Members of the genus are confined to subtropical and temperate waters.

***Kathetostoma canaster* sp. nov.**

Figure 1

Kathetostoma sp. Last et al., 1983: 423, fig. 30.92.

Material examined. Holotype: Victoria, Bass Strait, south-east of Cape Conran (37°55.27'-55.43'S, 149°10.32'-15.05'S), 114-119 m (62.5-65 fms), FRV "Hai Kung", BSS-T-147, M. Gomon et al., 9 Feb 1981, NMV A1594 (166 mm SL).

Paratypes: Victoria, Bass Strait, off Lakes Entrance, Danish seine trawl, R. Slack-Smith, NMV A217 (185 mm SL).

Tasmania, Bass Strait, south of Flinders Island (40°43.79'-43.82'S, 148°32.68'-34.41'E), 54.9-58.6 m, FRV "Hai Kung", BSS-T-139, M. Gomon et al., 7 Feb 1981, NMV A1550 (154 mm SL); south-south-east of Flinders Island (40°48.85'-43.38'S, 148°37.46'-38.55'E), 69.5 m, FRV "Hai Kung", BSS-T-140, M. Gomon et al., 7 Feb 1981, NMV A1563 (2 specs., 150-156 mm SL); off south-eastern tip of King Island (40°00.00'-59.98'S, 144°20.90'-23.64'E), 46-48 m (25-26 fms), FRV "Hai Kung", BSS-T-127, M. Gomon et al., 2 Feb 1981, NMV A1401 (215 mm SL); off north-west tip of Tasmania (40°48.31'-49.71'S, 144°17.06'-14.38'E), 99-102 m (54-56 fms), FRV "Hai Kung", BSS-T-125, M. Gomon et al., 2 Feb 1981, NMV A1400 (186 mm SL); off north-west tip of Tasmania, (40°32'S, 145°23'E), 44 m (24 fms), FRV "Sarda", BSS-T-116, M. Gomon et al., 4 Nov 1980, NMV A1222 (165 mm SL); east of Hippolytes Island, AMS I.21304-001 (2 specs., 111-195 mm SL); Storm Bay, 85 m, J. Koerbin, 16 Aug 1981, CSIRO H654-01 (165 mm SL); same locality, 30 m, CSIRO

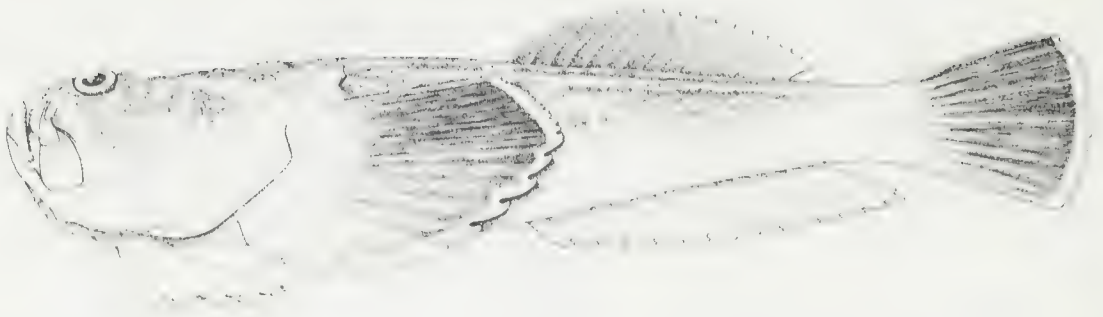


Figure 1. *Kathetostoma canaster* sp. nov., paratype, Tasmania, East of Hippolytes Island, AMS I.21304-001, 195 mm SL.

H655-01 (102 mm SL).

South Australia, south-west of Beachport (37°51'-45'S, 139°48'-39'E), 370-400 m, FV "Halcyon", MFG 109, collected by R. Wilson et al., 24 Oct 1981, NMV A2166 (2 specs., 121-128 mm SL); south-west of Beachport (37°42'-45'S, 139°42'-38'E), 380-420 m, FV "Halcyon", MFG 107, R. Wilson et al., 23 Oct 1981, NMV A2153 (2 specs., 201-255 mm SL); Great Australian Bight, 640-823 m, FRV "Endeavour", AMS E.3354 (158 mm SL).

Description. Dorsal-fin rays 16-18 (17 in holotype); anal-fin rays 15-16 (16 in holotype); pectoral-fin rays 19-21 (19 in holotype); vertebrae 31-33 (32 in holotype). Body of moderate length; greatest head width 35.3-39.3 (36.1 in holotype) % SL; head length 27.2-30.1 (30.1 in holotype) %. Unossified space between orbits moderately broad, 42.0-59.1 (51.8 in holotype) % interorbital distance; lateral edges of space usually parallel, posterior edge straight to slightly concave. Eyes moderately small, 17.7-23.8 (17.7 in holotype) % head length. Ossified dorsal surface of head with very low, fine, radiating ridges in juveniles, ridges nearly indistinct in adults; posterior edge of dorsal bony surface usually slightly concave, sometimes bulging slightly on each side. Lower jaw with row of moderately small canines, pair adjacent symphysis (and often one or more other pairs laterally) considerably larger than rest; upper jaw with broad band of smaller teeth and row of larger depressible canines on inner edge. Reaches at least 650 mm total length.

Body whitish below, speckled greyish brown above, with two more-or-less distinct broad bands dorsally on sides, first above pectoral fin and second below posterior half to two-thirds of dorsal fin, bands most distinct in small specimens;

dorsal surface of head variably mottled and speckled with dusky and dark pigment. Dorsal and caudal fins and lateral surfaces of pectoral fins dark with distinct pale margins; anal fin and lateral surfaces of pelvic fins pale or slightly dusky with pale margins.

Etymology. From the Latin *canaster* (grizzled), in reference to the distinctive colour pattern of this species.

Distribution. Restricted to southern Australia, including Tasmania, from about Sydney, New South Wales to the Great Australia Bight, in depths of 30 to over 370 m. The depth of the paratype (AMS E.3354) recorded early this century from 640-823 m is somewhat doubtful based on recent collecting efforts.

Comparisons. *Kathetostoma canaster* is most easily distinguished from the other Australian congeners by colour pattern, both *K. laeve* (Bloch & Schneider, 1801) and *K. nigrofasciatum* Waite & McCulloch, 1915, having distinctively contrasting dark bands against a uniformly paler background dorsally, instead of the more speckled pattern of the new species. In comparison with the new species, *K. nigrofasciatum* has fewer dorsal-fin rays (14-15), anal-fin rays (13-14) and vertebrae (27-29), a narrower head and more pronounced bulges along the posterior edge of the dorsal bony surface of the head. *Kathetostoma laeve* has on an average fewer anal-fin rays (13-15), fewer vertebrae (28-30), a smaller eye (15.7-19.3% head length) and lacks noticeably enlarged canines in the outer row of teeth of the lower jaw. A New Zealand species, *K. giganteum* Haast, 1873, differs in usually having

more dorsal-fin rays (18-20, rarely 20), more anal-fin rays (17-20, rarely 17 or 20) and a much rougher ornamentation on the bony dorsal surface of the head, especially in juveniles. The juvenile colour pattern of *K. giganteum* is distinctly different, consisting of a series of broader pale and dark vermiculations on the dorsal surface, those at the base of the dorsal fin forming interrupted longitudinal stripes.

Acknowledgements

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tion of specimens. Graham Milledge kindly prepared the illustration.

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NEW AUSTRALIAN FISHES PART 10.
A NEW GENUS AND TWO NEW SPECIES OF FRESHWATER
ELEOTRIDID FISHES (GOBIOIDEI)
FROM THE KIMBERLEY REGION OF WESTERN AUSTRALIA

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Abstract

Hoese, D.F. and Allen, G.R. 1987. New Australian fishes. Part 10. A new genus and two new species of freshwater eleotridid fishes (Gobioidei) from the Kimberley region of Western Australia. *Mem. Mus. Vict.* 48: 35-42.

A new genus and two new species of freshwater gudgeons (Family Eleotrididae) are described from the Kimberley region of north-western Australia. *Kimberleyeleotris*, gen. nov., is closely allied to *Hypseleotris* Gill, but differs in having vomerine teeth, reduced scales, a slightly larger mouth, and different pattern of head papillae. The two new species, *K. hutchinsi* and *K. notata* are thus far known only from the Mitchell and Drysdale rivers respectively. They differ from each other in the pelvic and pectoral rays (branched in *K. notata*, mostly unbranched in *K. hutchinsi*), in vertebral counts, in shape of the head and first dorsal fin, in extent of the gill opening and in colour pattern.

Introduction

The family Eleotrididae is represented by about 200 to 300 species in 40 genera. Most of the species are relatively small (usually less than 20 cm) fishes that usually dwell in brackish or freshwater habitats, primarily in tropical and subtropical regions. The largest number of species inhabits the Indo-Pacific fauna province. There has been extensive speciation in fresh waters of Australia and New Guinea, with about 60 to 70 species in the region and many of them endemic.

The present paper describes a new genus and two new species obtained by J.B. Hutchins of the Western Australian Museum during expeditions to the Kimberley region of north-western Australia during 1975 and 1976. Previous treatment was given to the genus *Hypseleotris* of Western Australia (Hoese and Allen, 1983) and the eleotridid fauna of Lake Kutubu, Papua New Guinea (Allen and Hoese, 1986).

The genus shows several specialisations common to a group of eleotridid genera recognised here as the subfamily Eleotridinae.

Methods

Methods for most counts and measurements mainly follow Hubbs and Lagler (1958). The longitudinal scale count was taken along the midline from behind the pectoral base to the end of the hypural. The transverse scale count was taken from the origin of the second dorsal fin ventroposteriorly to the anal base (TRDB). Caudal ray counts are given as upper/lower. Gill raker counts include all rudiments. Counts for vertebrae, fin rays, scales and gill rakers and measurements of types are presented in Tables 1-6. Head depth and width were taken at the posterior preopercular margin. The postdorsal length is the distance from the base of the last ray in the second dorsal fin to the posterior tip of the hypural plate. The urogenital papilla width was taken at the base of the papilla. Terminology for bones follows Springer (1983). The ptygiophore formula follows Birdsong (1975).

Types are deposited in: Australian Museum, Sydney (AMS); Western Australian Museum, Perth (WAM). Comparative material of other eleotridid genera is deposited in the Australian

Museum.

Head papilla drawings were based on camera lucida outlines, with papilla patterns a composite based on two or more specimens.

Kimberleyeleotris gen. nov.

Type species. Kimberleyeleotris hutchinsi sp. nov.

Diagnosis. No head pores. No scales on head. Body scales reduced, with large naked areas on belly and below first dorsal fin. Anterior nostril a simple pore above middle of upper lip, posterior nostril a simple pore above anterodorsal margin of eye. Gill opening broad, extending anteroventral to preoperculum or eye. First dorsal fin VI, origin well posterior to pectoral insertion. Anal fin original immediately below second dorsal origin. Pelvic origin well posterior to pectoral insertion, but before first dorsal origin. Vomer with few minute conical, pointed, loosely attached teeth. Head papillae in transverse pattern.

Osteology. Typical eleotridid features. Dorsal and ventral postcleithra present; palatine L-shaped, articulating dorsally with medial base of lateral ethmoid; branchiostegal rays 6; urohyal with very slender transverse shelf on ventral margin (broad in most eleotridids); pelvic intercleithral and ventral intercleithral cartilages present.

Eleotrinine specialisations. Inner adductor mandibulae tendon attaching about to middle of maxilla; outer tendon or connective tissue attaching on groove on upper third of maxilla. Caudal fin with 8 upper and 7 lower segmented rays, uppermost articulates with hypural 5, 7 segmented rays articulating with upper hypural plate, 6 segmental rays articulating with lower hypural plate, lowermost segmented caudal ray articulating with parhypural; first upper procurent caudal ray separated from posterior epural by upper procurent cartilage; lower procurent cartilage extending over tip of haemal arch of penultimate vertebra, surrounded by base of first lower procurent ray, which also extends over tip of haemal arch.

Other features. No mesopterygoid. Basihyal spatulate. Scapula ossified. Epurals 2; lower hypural plate not fused with urostyle. First dorsal pterygiophore formula 3(12210) or 3(12211). Preoperculum with short process adjacent to, but not connecting to upper end of symplectic. Sym-

plectic slender. Metapterygoid slender, separated by cartilaginous rod from quadrate. Lacrimal triangular, overlapping about one-half of premaxilla. Anterior tip of vomer broad, below and in front of ethmoid. Dorsal flange of sphenotic short not reaching supraoccipital.

Etymology. From Kimberley, referring to the type locality region, and *Eleotris*, a genus of Eleotrididae.

Relationships. The genus is most similar in general appearance to *Hypseleotris* Gill, in position of fins (posterior placement of pelvic fin and first dorsal fin and beginning of anal fin immediately below second dorsal origin), slender body, narrow ventral shelf of urohyal, slender metapterygoid separated by long cartilage from quadrate and in the lateral placement of eyes. *Kimberleyeleotris* differs from *Hypseleotris* in the papilla pattern, in possessing vomerine teeth, in having reduced scales and with a slightly larger mouth. Although species of *Hypseleotris* may be deeper bodied, species from the Kimberley Region of Western Australia are very slender and easily confused with this new genus. Only some species of *Hypseleotris* lack a mesopterygoid.

The attachment of the adductor mandibulae tendon, number of and attachment of segmented caudal rays are characteristic of eleotridine genera, apparently representing a specialised condition. In the primitive butine eleotridids the inner adductor maxillae tendon attaches anteriorly on maxilla, often attaching to a bony process off the maxilla. In butines and most gobiids there are 17 (rarely 14, 15 or 16 in butines) segmented caudal rays and the uppermost ray articulates directly with the posterior or single epural and is not displaced by cartilage (Hoesé, unpubl.), suggesting that eleotridines have probably lost the upper segmented ray and probably the ventralmost ray as well. Butines with 14-16 segmented caudal rays typically have lost rays from the hypural plates.

Kimberleyeleotris hutchinsi sp. nov.

Figures 1, 2

New genus and species B.-Allen, 1982: 61, pl. 13, fig. 7 (Mitchell River).

Material examined. Holotype. Western Australia, tributary

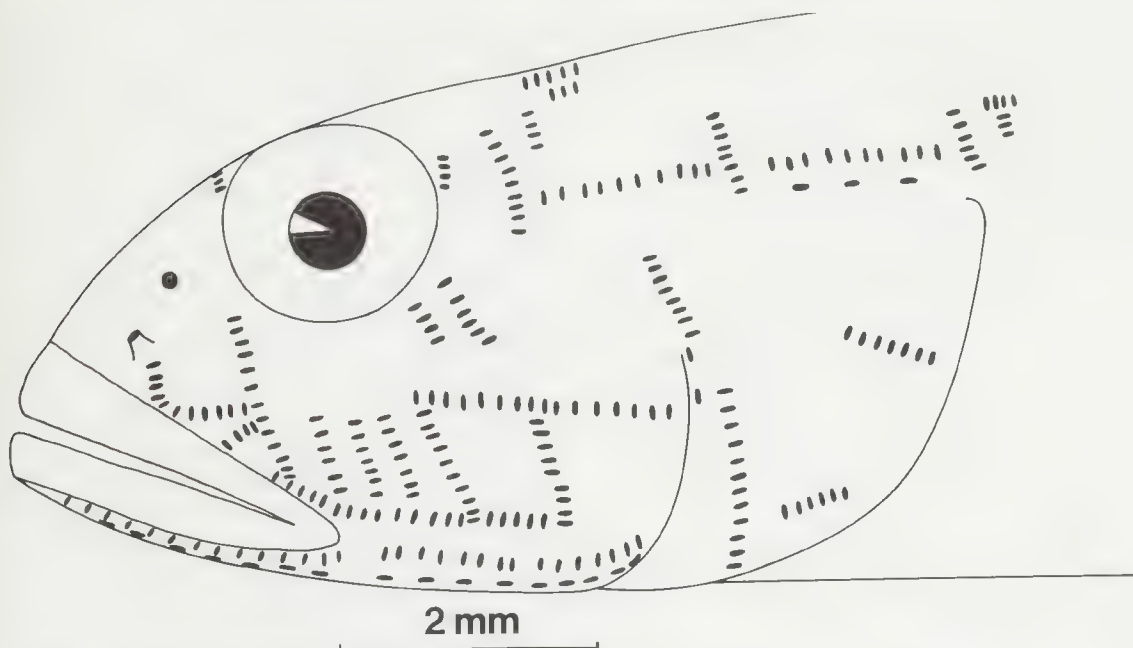


Figure 1. Sensory papilla pattern of *Kimberleyeleotris hutchinsi* based on holotype and several paratypes.



Figure 2. Paratype of *Kimberleyeleotris hutchinsi*, AMS I.26255-001, based largely on a 31 mm SL specimen.

of Mitchell River (14°49'S, 125°42'E), J.B. Hutchins and T. Dryker, 31 Oct 1976, WAM P.25684-009 (30.8 mm SL male).

Paratypes. Taken with holotype, AMS I.26322-001, 2(25-29), cleared and stained, AMS I.26255-001, 8(26.9-31 mm SL) and WAM P.25684-007, 14(25-30 mm SL).

Western Australia, Pool 5km above falls, Mitchell River (14°49'S, 125°41'E), J.B. Hutchins and T. Dryker, 30 Oct 1976, WAM P.25683-008, 2(22-24 mm SL).

Diagnosis. Pelvic rays and most pectoral rays unbranched. Vertebrae 25; first dorsal fin elevated; body pale coloured; gill opening extends anteroventral to preoperculum (between posterior preopercular margin and posterior margin of

eye). Body light brown, first dorsal fin black anteriorly between first three spines, sometimes pale in small females; second dorsal fin with margins black in males, usually pale in female, other fins clear to light grey.

Description. An asterisk indicates count of holotype (See also Tables 1 and 2). First dorsal fin VI* (in 25); second dorsal fin I, 8-9, anal fin I, 9-10, usually with 1 more anal ray than dorsal ray (2 in 5 specimens); pectoral rays 14-16 (rarely 14 or 16; segmented caudal rays 8/7* (24); branched caudal rays 6/4 (1), 6/5* (22), 7/6 (1); unseg-

Table 1. Frequencies of fin, gill raker and caudal ray counts in two species of *Kimberleyeleotris*

Character	State	<i>K.</i>	
		<i>hutchinsi</i>	<i>K. notata</i>
Second dorsal	1,8	18	—
	1,9	7*	2*
Anal	1,9	12	1*
	1,10	13*	1
Pectoral rays	14	4	2*
	15	20*	—
	16	1	—
Lower gill rakers (1st arch)	11	—	1*
	12	1	1
	13	1	—
	14	6	—
	15	2	—
Total gill rakers (1st arch)	14	—	1*
	15	1	1
	16	1	—
	17	4	—
	18	4	—
Lower gill rakers (outer face of 2nd arch)	10	2	2*
	11	6	—
	12	2	—
Procurent caudal ray counts — upper	9	—	2*
	10	—	—
	11	6*	—
	12	6	—
	13	5	—
lower	8	—	2*
	9	—	—
	10	4	—
	11	7*	—
	12	6	—

mented caudal rays 11-13/10-12; vertebrae 12+13* (11), 13+12 (14); longitudinal scale count 25(2), 28(3), 29(1), 31(1), 32(1), 32(1), 33*(4), 34(3), 35(3), 36(1); transverse scale count (TRDB); 5(1), 6(3), 7(2), 9*(3), 10(3); gill rakers on outer face of first arch 3-4/11-14; lower rakers on outer face of second arch 10-12.

Head, slightly compressed, flat on top, length 27.3-32.5% SL; snout 7.5-8.8% SL; eyes lateral, 6.6-9.0% SL; mouth oblique forming an angle of about 40° with body axis; posterior margin

of jaws below or just before anterior margin of eye, length of upper jaw 7.9-9.2% SL; body slender and compressed; depth at pelvic origin 12.5-15.4% SL depth at anal origin 10.7-14.0% SL in females, 14.1-15.4% SL in males; caudal peduncle slender and elongate, slightly more than twice the length of the base of the second dorsal fin. Scales ctenoid; body covered with scales posteriorly, anteriorly scales taper toward midline, extending forward to below middle to end of first dorsal fin; anteriormost scales usually in a single line often widely spaced and not in contact with other scales; naked patch below dorsal fin often extends to below end of second dorsal fin; area immediately above anterior half to two-thirds of anal fin base often naked; belly, pectoral base, prepelvic area and head naked. Gill rakers elongate on outer face of first arch, rakers near angle longer than gill filaments; rakers on inner face of first arch and following arches short and denticulate, short denticulate rakers on inner face of last gill arch.

First dorsal fin elevated in males (19.9-25.3% SL), with pointed margin, fin reaches to or well beyond second dorsal fin origin when depressed; first dorsal spine moderate in length, second to fourth spines subequal in length, fifth spine subequal in length to first spine; sixth spine short, about one-third length of fifth spine; fin of females low and pointed (height 14.5-18.0% SL) reaching to near, but before second dorsal origin; second dorsal fin well separated from first dorsal fin, fin elevated, slightly higher than first dorsal fin of female and much higher than body depth, first segmented ray unbranched, other rays branched; anal fin original below second dorsal origin; fin slightly shorter in height to second dorsal fin, but higher than body depth, first 1 or 2 segmented rays unbranched, other rays branched; pelvic fin elongate reaching to or just before anus; pectoral fin rays elongate, reaching to above or slightly beyond anus; pectoral rays typically appearing unbranched, but often 1 to 4 central rays with single branch at extreme tip; caudal fin with truncate to emarginate posterior margin.

Urogenital papilla of male slender and pointed length 2.5 to 3 times width at base; papilla of female broad and rounded, with short papilla at

Table 2. Measurements (in mm) of types of two new species of *Kimberleyeleotris*

Character	<i>K. notata</i>		<i>K. hutchinsi</i>		males					females				
	holotype	paratype	holotype	paratypes										
SL	37.4	34.1	30.8	29.6	30.2	28.6	26.0	27.0	25.0	26.8	24.0	24.2		
Head length	10.5	10.4	8.6	8.0	8.6	8.0	7.1	7.1	7.5	7.5	7.8	7.0		
Head width	5.3	5.1	3.8	3.4	3.9	3.3	2.9	3.1	3.2	3.1	2.8	2.8		
Head depth	4.9	4.9	4.5	3.9	4.7	4.3	3.6	3.6	3.5	3.6	3.0	3.2		
Snout length	2.8	2.8	2.6	2.3	2.3	2.3	2.0	2.2	2.2	2.1	1.8	1.9		
Upper jaw length	3.6	3.6	2.7	2.5	2.7	2.6	2.2	2.3	2.3	2.1	2.0	1.9		
Eye length	2.8	2.8	2.3	1.8	2.3	2.3	1.8	1.8	2.0	2.1	1.8	1.9		
Body depth at pelvic origin	4.9	4.7	4.3	4.0	4.5	4.4	3.7	3.8	3.8	4.0	3.0	3.4		
Body depth at anal origin	4.6	4.5	4.7	4.2	4.6	4.4	3.7	3.2	3.5	3.6	2.7	2.6		
Base of second dorsal fin	6.1	6.5	4.1	3.8	4.4	4.0	3.2	3.1	2.6	3.0	3.3	3.2		
Post dorsal length	10.1	9.1	10.0	9.3	9.7	9.3	8.4	8.4	8.8	8.3	7.8	7.7		
Caudal peduncle length	10.5	9.7	9.7	9.4	9.7	8.9	8.0	8.3	8.3	8.0	7.7	7.5		
Depressed first dorsal length	7.3	6.1	7.8	5.9	7.4	7.0	5.9	4.2	4.5	4.5	3.5	3.8		
Pectoral length	8.8	9.2	6.4	—	7.3	6.0	—	5.7	5.7	5.6	4.3	4.7		
Pelvic length	6.6	6.2	5.8	6.1	6.4	6.1	5.5	5.8	4.8	4.9	4.6	5.0		
Caudal length	8.6	9.4	5.8	5.3	5.6	5.1	4.5	3.8	4.2	4.9	3.6	4.3		
Urogenital papilla length	1.3	1.2	0.6	0.6	0.5	0.5	0.5	0.9	1.0	1.0	0.9	0.9		
Urogenital papilla width	0.8	0.7	0.2	0.2	0.2	0.2	0.2	0.6	0.7	0.7	0.6	0.6		

each posterolateral margin, length 1.3 to 1.4 times width at base.

Colour of freshly collected male (figured in Allen, 1982). Head and body light greyish-brown, light purple ventrally on head, body darker on lower side. Fins as described below under alcohol coloration, except anal fin mainly reddish orange.

Colour in alcohol. Head and body pale yellowish. Scale pockets edged with melanophores and lines of melanophores on skin along myosepta; males with dense concentrations of melanophores scattered over body, often most dense ventrally on caudal peduncle; females with few scattered melanophores and chromatophores along edges of scales distinct. Large median black blotch ventrally behind urogenital papilla connecting to thin black line on either side of base of anal fin, lines join behind anal fin to form thin median black stripe extending to anterior base of procurent caudal rays.

First dorsal fin black before fourth dorsal spine, black extending on to and along distal tip of fin; rest of fin clear, except dense concentrations of chromatophores along fifth and sixth dorsal spines. Second dorsal fin with large black blotch at base of fin anteriorly, blotch extending just anterior to third segmented ray, thin black distal margin; often with broad, black stripe on distal upper third of fin; rest of fin clear, but with some scattered melanophores. Anal fin clear with few scattered melanophores; small patch of melanophores near anterior base forming faint blotch. Caudal fin light grey with scattered melanophores. Pectoral base with few scattered melanophores; pectoral fin clear to grey with melanophores along lateral margins of rays. Pelvic fins clear to white, with few elongate melanophores along lateral margins of rays in males.

Etymology. Named after J.B. Hutchins of WAM, who collected the type specimens.

Remarks. Males of this species are typically larger than females. Of the 21 specimens for which the sex could be determined, 10 are females between 22.5 and 27 mm SL, and 11 are males between 25 and 31 mm SL. Only two males are less than 27 mm SL. In the samples males average 29.3 mm SL and females 25.3 mm SL, with the average sizes significantly different ($p < 0.001$).

Kimberleyeleotris notata sp. nov.

Figures 3, 4

Gobiid species.—Hutchins, 1977: 107, fig. 11 (Drysdale River).

New genus and species A.—Allen, 1982: 60, pl. 13, fig. 4 (Drysdale River).

Material examined. Holotype. Western Australia, Drysdale River at rapids about 4 km above junction with Forest Creek (14°38'S, 126°58'E) J.B. Hutchins (stn C5-4), 21 Aug 1975, WAM P.25427-010 (37.5 mm male).

Paratype. Taken with holotype, AMS I.26254-001, 35.5 mm SL male.

Diagnosis. Gill opening broad, extending anteroventral to posterior quarter of eye; pectoral and pelvic rays branched; vertebrae 26; first dorsal fin with low rounded margin; colour dark brown, with 3 to 5 thin vertical brown bars anteriorly and 8 to 10 chevron-shaped brown bar on midside posteriorly; all fins dusky.

Description. First dorsal fin IV (2); second dorsal fin I, 9-10; anal fin I, 9-10, number of dorsal rays equal to number of anal rays; pectoral rays 14; segmented caudal rays 8/7 (2); branched caudal rays 6/5 (2); unsegmented caudal rays 9/8; vertebrae 12/14 (2); longitudinal scale count 25-27; transverse scale count (TRDB) 8; gill rakers on outer face of first arch 3/1/10-11; lower rakers on outer face of second arch 9-10. See also Tables 1 and 2.

Head more or less square in cross section, top of head flat, length 28.1-30.4% SL; snout rounded in dorsal and side views, length 7.5-8.2% SL; eyes lateral, 7.5-8.2% SL; mouth oblique forming an angle of about 40° with body axis; posterior margin of jaws below anterior margin of eye, length 9.6-10.6% SL; body slender and compressed; depth at pelvic origin 13.1-13.8% SL; depth at anal origin 12.3-14.1% SL; caudal peduncle slender and elongate slightly less than twice the length of base of second dorsal fin. Scales ctenoid; body covered with scales posteriorly, anteriorly scales taper toward midline, extending forward to below origin of first dorsal fin; anteriormost scales usually in single line of 1 or 2 rows, with scales widely spaced and not in contact with other scales; naked patch below dorsal fin often extends to below middle of second dorsal fin; area immediately above anal-fin base scaled; belly, pectoral base, prepelvic area

and head naked. Gill rakers elongate on outer face of first arch, rakers near angle longer than gill filaments; rakers on inner face of first arch and following arches short and denticulate, no rakers on inner face of last gill arch.

First dorsal fin low in 2 males examined (17.9-19.5% SL), with rounded margin, fin ending just before second dorsal fin when depressed, first dorsal spine moderate in length, second to fourth spines subequal in length, fifth spine slightly shorter than fourth spine, sixth spine short, slightly less than half of fifth spine; second dorsal fin well separated from first dorsal fin, second dorsal fin elevated, subequal to height of first dorsal fin and slightly higher than body depth; first segmented ray unbranched, other rays branched; anal-fin origin below second dorsal origin; fin slightly shorter in height to second dorsal fin, but higher than body depth, first segmented ray unbranched, other rays branched; pelvic fin elongate reaching to just before anus (well

short of anus on one side in one specimen), length 17.2-18.2% SL; pectoral-fin rays elongate, reaching to above or slightly beyond anus, length 23.5-27.0% SL; pectoral rays branched; caudal fin apparently with a rounded to truncate posterior margin, (fin damaged in both specimens).

Urogenital papilla of male broad and flat, with smooth margin, length 1.6 to 1.7 times width at base.

Colour in alcohol (fresh coloration unknown). Head and body brown, densely covered with melanophores; melanophores most dense along margins of scales. Snout, interorbital region and cheeks dark brown. Midside with a series of vertical and chevron-shaped, dark brown bands; bands separated from mid-dorsal region by approximately length of band; first vertical band broad, below and before beginning of first dorsal fin; second vertical band broad and below second to third dorsal spine; third vertical band,

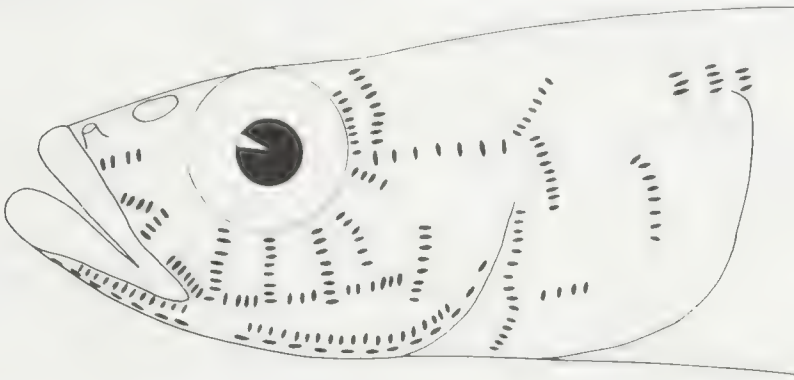


Figure 3. Camera lucida drawing showing sensory papilla of holotype of *Kimberleyeleotris notata*.



Figure 4. Holotype of *Kimberleyeleotris notata*.

narrow, below end of first dorsal fin; thin, vertical band between two dorsal fins; thin, vertical band below second dorsal origin; followed by 12 chevron-shaped bands (with apex forward) in holotype (paratype damaged); faint vertically elongate grey bar at base of caudal fin.

Median fins dark grey to black; without distinct rows of dark spots; dorsal portion of pectoral base with dark brown spot that fades ventrally, fin with melanophores along upper and lower margins of rays; pelvic fins also with melanophores along edges of rays and with some scattered melanophores on membranes. Melanophores dense around anus, but not forming an obvious dark ring; melanophores dense on urogenital papilla.

Etymology. From the latin *nota* (mark or sign) referring to the pattern of markings on the side of this species.

Acknowledgements

We thank J.B. Hutchins for making the material available for study. Assistance with drawings was

kindly provided by L. Moody.

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NEW AUSTRALIAN FISHES. PART 11.
A NEW GENUS AND SPECIES OF ELEOTRIDID (GOBIOIDEI)
FROM SOUTHERN AUSTRALIA WITH A DISCUSSION OF RELATIONSHIPS

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Abstract

Hoese, D.F. and Larson, H.K. 1987. New Australian fishes. Part 11. A new genus and species of eleotridid (Gobioidae) from southern Australia with a discussion of relationships. *Mem. Mus. Vict.* 48: 43-50.

Thalasseleotris adela is described as a new genus and species of eleotridid fish from marine waters of southern Australia. Individuals of the monotypic genus are among the smallest eleotridid fishes known. The genus is one of three truly marine genera in the family and is peculiar in superficially resembling a gobiid. It is distinctive in lacking head pores, in having a single pterygiophore before the first haemal arch, and in having the first gill slit closed by a membrane to the inner gill cover. Although superficially similar to other temperate eleotridid genera, it has several primitive features, not found in many of the more specialised Australian genera and immediate relatives are unknown. The species, distributed from New South Wales throughout southern Australia to south-western Western Australia shows considerable geographical variation in pectoral-ray counts.

Introduction

Few genera of gobioid fishes are confined to temperate regions of Australia. Two gobiid genera are found only in southern waters, with *Tasmanogobius* restricted to Victoria, Tasmania and South Australia, and *Nesogobius* restricted to southern New South Wales, Victoria, Tasmania, South Australia and southern Western Australia. Similarly, few temperate eleotridid genera are known from Australia. *Philypnodon* is restricted to fresh waters and coastal estuarine lakes of southern Queensland, New South Wales, Victoria and South Australia, while *Gobiomorphus* is restricted, in Australia, to coastal rivers of southern Queensland, New South Wales and eastern Victoria. *Gobiomorphus* occurs in New Zealand.

In 1972 a small gobioid that was thought to be related to *Heteroleotris* was collected from Tasmania. This relationship was based on its general similarity in body form to *Heteroleotris* and other morphological similarities. Both genera have 10/17 vertebrae and the first gill slit closed. Study of the osteology, however, revealed that the species has several primitive features not known in

any gobiid fish. The species was subsequently found to be widespread in southern Australia in marine rocky reef areas from Sydney, New South Wales, to Rottnest Island, Western Australia.

Methods

The first dorsal pterygiophore formula follows Birdsong (1975). In descriptions and the tables, an asterisk indicates the value is that of the holotype, figures in brackets in the text indicate the number of specimens examined with the preceding value. In the *Material examined* list the number of specimens is given following the registration number and the size range in mm standard length is given in parentheses. Counts and measurements mostly follow methods outlined by Hubbs and Lagler (1958). In the species studies, the first ray of the anal fin and second dorsal fin is always a spine. The remaining rays in these fins are segmented. The last ray of the second dorsal and anal fins, as counted, consists of two elements in contact though distinct through the extreme base. Segmented caudal ray

count is of total segmented rays, and in most specimens there are eight dorsal and eight ventral rays. Unsegmented caudal rays are recorded as dorsal/ventral rays. Longitudinal scale counts (LS) are taken along the midline of the sides of the body, from the upper base of the pectoral fin to the end of the hypural, excluding small scales on the base of the caudal fin. Transverse scale counts are taken from the anal spine upward and backward to the base of the second dorsal fin (TRB). Vertebrae are counted from radiographs. Caudal vertebrae are defined here as those with a closed haemal arch and a developed haemal spine. Generally in gobioids, one or two anal pterygiophores precede the first haemal spine (whether one or two depending on the genus). The osteology was studied from trypsin prepared cleared specimens, stained with alizarin red and in some cases, counterstained with alcian blue.

Papillae were studied from cleared and stained material and untreated specimens (Hoesé, 1983). The papillae line terminology follows Hoesé (1983). The abbreviation LT refers to a more or less horizontal line, with each papilla axis at right angles to the axis of the line; LL refers to a more or less horizontal line, with each papilla axis along the axis of the line; VT refers to a more or less vertical line with each papilla axis at right angles to the axis of the line. The term OT is used specifically for the oblique lines on the operculum, with each papilla axis at right angles to the axis of the line.

Material is deposited in: Australian Museum, Sydney (AMS); Laboratory of Ichthyology, Crown Prince's Palace, Tokyo (LICPP); Museum of Victoria, Melbourne (NMV); Northern Territory Museum of Arts and Sciences, Darwin (NTM); Queen Victoria Museum, Launceston (QVM); South Australian Museum, Adelaide (SAMA) and Western Australian Museum, Perth (WAM).

Thalasseleotris gen. nov.

Type species. Thalasseleotris adela sp. nov.

Diagnosis. Gill opening broad, gill membranes attaching to isthmus below posterior quarter of eye; membranes forming free fold across isthmus. Vertebrae 10/17. Tongue tip deeply bilobed. First gill slit closed by membrane from lower part of first gill arch to inner gill cover. Head subterete,

body covered with ctenoid scales, cycloid on belly. Mouth small, posterior end of jaws reaching to point ventral to middle to posterior quarter of eye. Pelvic fins completely separate, with no basal membrane. Pterygiophore formula 3(22110) in 6, 3(212110) in 1. Segmented caudal rays usually $8+8=16$. Tendon from adductor mandibulae attaching anteriorly and ventrally on inner side of maxilla in front of maxillo-dentary ligament. Single pterygiophore preceding first haemal arch.

Osteology. Typical eleotridid features. Palatine more or less L-shaped, with short dorsal flange articulating with middle of anterior part of lateral ethmoid. Branchiostegal rays 6.

Primitive butine features. Tendon from adductor mandibulae attaching anteriorly on inner face of maxilla, slightly anterior to maxillo-dentary ligament. Caudal fin usually with 8 dorsal (rarely 9) and 8 lower segmented rays uppermost articulates with hypural 5; 7 segmented rays articulating with upper hypural plate, 6 segmented rays articulating with lower hypural plate, 1 segmented caudal ray articulating with parhypural lowermost articulating with haemal arch of penultimate vertebra.

Specialisations. No mesoptrygoid. Dorsal and ventral postcleithra absent. Maxillo-dentary ligament attaches to distinct process on outer face of maxilla. Urohyal without transverse shelf on ventral margin (broad in most eleotridids). Basihyal triangular, broader than long. Scapula ossified dorsally, cartilaginous ventrally. Epurals 1. Interneural gap (interneural space without pterygiophore) between 2 dorsal fins. Frontal very narrow between orbits. Single pterygiophore precedes first haemal spine.

Other features. Pelvic-intercleithral and ventral intercleithral cartilages present. Lower hypural plate with articulation joint connecting to urostyle but not fused with urostyle or upper hypural plate. Pterygiophore formula 3(22110). Preoperculum broad adjacent to symplectic, but without process connecting to upper end of symplectic. Symplectic slender. Metapterygoid broad, separated by cartilaginous rod from quadrate. Lacrimal elongate and triangular, overlapping middle of maxilla. Dorsal flange of sphenotic short not reaching supraoccipital.

Etymology. From the Greek *thalassa* (sea) and *Eleotris* (a genus of fish), feminine.

Remarks. In the presence of the interneural gap, the absence of postcleithra and mesoptrygoid, the genus is similar to other temperate Australian eleotridids, such as *Philypnodon* or *Gobiomorphus*. However, these latter genera are specialised in having the tendon from the adductor mandibulae attaching to near the middle of the maxilla and 15 segmented caudal rays. In *Philypnodon* the dorsal postcleithrum is present, and in some species of *Gobiomorphus* the dorsal postcleithrum and mesoptrygoid are present. Similarly in *Hypseleotris* the mesoptrygoid is present only in some species. Both the mesoptrygoid and dorsal postcleithrum are poorly developed in most eleotridid genera and presumably these structures have been lost several times.

The genus is unique among eleotridids in having a single pretygiophore before the first haemal spine, very narrow interorbital, and a broad membrane closing the first gill arch. A partial membrane is developed in some eleotridids, such as in *Eleotris acanthopoma*.

Studies currently underway by the senior author indicate that the jaw musculature is unlike that of other eleotridids. Consequently, its relationships are, at present, uncertain.

Thalasseleotris adela sp. nov.

Figures 1-4

Material examined. Holotype. Tasmania, 3 km north of Norfolk Creek, north of Port Arthur (43°00'S, 147°46'E), 1-2 m, D. Hoese and W. Ivantsoff, 2 Dec 1972, AMS I.17550-010, (25 mm SL female).

Paratypes. New South Wales. Oakes Bay, Port Hacking, 1-2 m, NSW Fisheries, CSIRO and Australian Museum party, 14 Nov 1974, AMS I.18241-017, 23 (9-28); AMS I.18241-035, 4 (20-26), cleared and stained; NTM S.11905-001m 4 (18-28).

Victoria. Melbourne, R. Kuiter, 9 Jun 1976, AMS I.19178-001, 2 (25-26). Portsea Pier, Port Phillip, 3-4 m, R. Kuiter and L. Reynolds, 12 Apr 1977, AMS I.19773-010, 3 (22-25). Portsea Pier, Port Phillip, R. Kuiter, 30 Jul 1977, AMS I.19921-001, 1 (19). Portsea Hole, 20-25 m, R. Kuiter, NMV A.3821, 1 (26). Portsea, 4 m, R. Kuiter, 12 Jul 1981, NMV A.3820, 6 (22-28). Portsea, R. Kuiter, NMV A.2684, 4 (24-27).

Tasmania. Type locality, AMS I.17550-014, 11 (18-31). Port Arthur, 1 m, D. Hoese and W. Ivantsoff, 2 Dec 1972, QVM 1986/5/8, Type No. 429, 1 (25). Mundy Island, Port Davey, J.B. Hutchins, 1 Feb 1982, WAM P.27542-004, 1 (18). Port Davey, J.B. Hutchins, 1982, WAM P.27543-005, 1 (30). Hope Island, Port Esperance, J.B. Hutchins, 6 Feb 1982, WAM P.27544-014, 4 (21-22). 3 km north of Esperance Point, Port Esperance, J.B. Hutchins, 9 Feb 1982, WAM P.27546-012, 8 (13-22). Hope Island, Port Esperance, J.B. Hutchins, 1982, WAM

P.27547-007, 6 (22-25). Port Arthur, J.B. Hutchins, 1982, WAM P.27549-015, 3 (22-23). West headland of Spring Bay, J.B. Hutchins, 1982, WAM P.27554-018, 4 (19-22). Skeleton Bay, St Helens, J.B. Hutchins, 24 Feb 1982, WAM P.27555-011, 4 (19-20). Bridport, J.B. Hutchins, 1982, WAM P.27564-014, 4 (13-21).

South Australia. Western River Cove, Kangaroo Island, 15 m, D. Hoese and party, 3 Mar 1978, AMS I.20160-020, 6 (15-26). Vivione Bay, Kangaroo Island, 0-2 m, D. Hoese and K. Handley, 6 Mar 1978, AMS I.20171-020, 1 (22). Knob Point, Kangaroo Island, 0-2 m, H. Larson and party, 5 Mar 1978, SAMA F.5489, 1 (21). Off Kings Beach, Victor Harbour, J.B. Hutchins, 1981, WAM P.27136-015, 3 (21-25).

Western Australia. Rottnest Island: Fish Hook Bay, 11 m, J.B. Hutchins, 11 Apr 1978, WAM P.26060-016, 2 (16-20). 300 m north of Point Clune, 8 m, J.B. Hutchins and party, 7 Jun 1980, WAM P.26616-025, 2 (24-24). Off Geordie Bay, 5 m, J.B. Hutchins, 14 Jun 1980, WAM P.26620-023, 3 (15-20). Fish Hook Bay, J.B. Hutchins, 1984, WAM P.27616-033, 1 (20).

Western Australia, Recherche Archipelago: Sandy Hook Island, B. Hutchins and Bryce, 11 Apr 1977, WAM P.25570-022, 1 (24). West side of Mondrain Island, 10-13 m, J.B. Hutchins, 18 Mar, 1978, WAM P.26005-011, 1 (20). East side of Lucky Bay, 5-7 m, J.B. Hutchins, 12 Apr 1984, WAM P.28293-033, 9 (15-22). East side of Mondrain Island, 5-6 m, J.B. Hutchins, 13 Apr 1983, WAM P.28296-047, 6 (19-25). East side of Lucky Bay, 8-10 m, J.B. Hutchins, 14 Apr 1984, WAM P.28297-025, 2 (12-22). Lucky Bay, 24 m, J.B. Hutchins, 18 Apr 1984, WAM P.28298-017, 1 (21). East side of Lucky Bay, 11-12 m, J.B. Hutchins, 16 Apr 1984, WAM P.28300-028, 3 (12-23).

Non-type material. New South Wales. Port Hacking, LICPP ex AMS I.18241, 6 (20-21).

Tasmania. Esperance Point, Port Esperance, WAM P.27545-009, 5 (18-23). Point Homes Lookout, Mercury Passage, WAM P.27553-020, 1 (13).

Western Australia, Rocky Cape, WAM P.27569-019, 1 (12). West side of Lucky Bay, Recherche Archipelago, WAM P.26000-018, 2 (14-210). East side of Lucky Bay, Recherche Archipelago, WAM P.26001-008, 2 (14-22).

Diagnosis. No head pores. Second dorsal usually I, 9; anal usually I, 8; pectoral usually 18-20; pelvics I, 5, fifth ray highly branched with 4-6 branches. Yellow to dark brown stripe from anteroventral margin of eye to just above middle of premaxilla. Elongate yellowish to black blotch directly below eye extending to posterior end of jaw (faint in some preserved material). Dark vertical bar at base of caudal fin.

Description. First dorsal V(1), VI*(59), VII(1); second dorsal I, 9*(58), I, 10(3), anal I, 8(2), I, 9*(57); pectoral rays 17-21 (Table 1), pelvic rays I, 5*(61); segmented caudal rays 15(7), 16*(38), 17(9); branched caudal rays 13*(21), 14(24), 15 (4), 16(1); unsegmented caudal rays 8/6 (1), 7/6 (5); vertebrae 10/17* (18), longitudinal scale series 22-

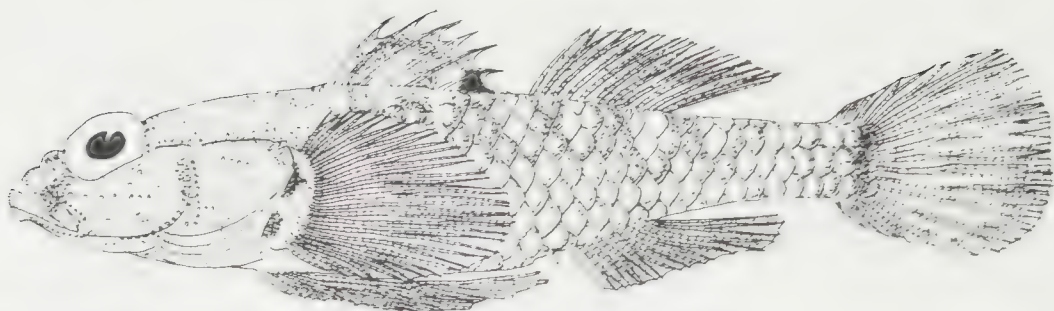


Figure 1. Holotype of *Thalasseleotris adela*, AMS I.17550-010.

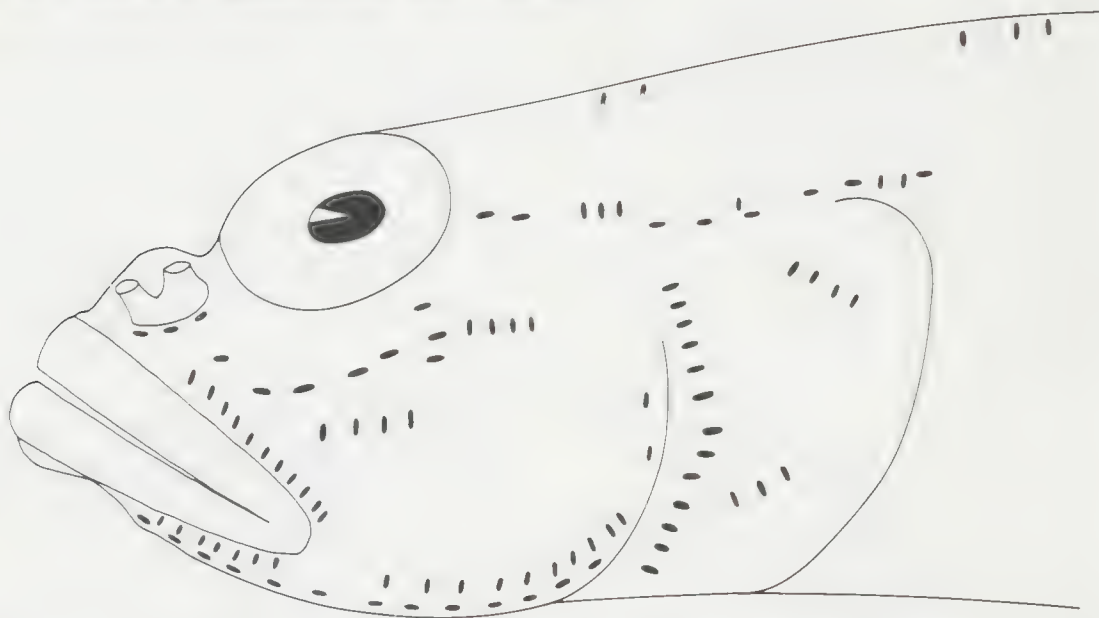


Figure 2. Lateral view of head showing sensory papillae in *Thalasseleotris adela*, based on 25 mm cleared and stained paratype AMS I.18241-035.

27 (Table 1); transverse scale series (TRB) 6(14), 7(5*). Measurements of holotype in mm: SL 23.8, head length 7.9, head width at posterior preopercular margin 5.3, head depth at posterior preopercular margin 4.7, upper jaw length 3.2, snout length 2.0, eye length 2.6, body depth and pelvic origin 4.9, body depth at anal origin 4.7, pectoral length 7.5, pelvic length 7.7, caudal length 6.1, third-dorsal spine length 3.7, fourth-dorsal spine length 3.5, fifth-dorsal spine length 3.7.

Head, pectoral base, breast and prepelvic area naked. Body scales extend forward to line from

upper pectoral insertion to below 4th-6th dorsal spine. Snout short, rounded in dorsal view, slightly less than eye length; prominent bump on snout formed by protrusion of ascending processes of premaxillae, both nostrils at end of short tube, anterior nostril subequal in length to posterior nostril; posterior nostril about 1 nostril diameter in front of eye, anterior nostril slightly less than 1 nostril diameter from upper lip, eyes elevated, shallow groove between and behind eye; interorbital very narrow, eyes almost touching; mouth oblique, angled about 35-40° with body axis; lips thick, jaws reaching posteri-

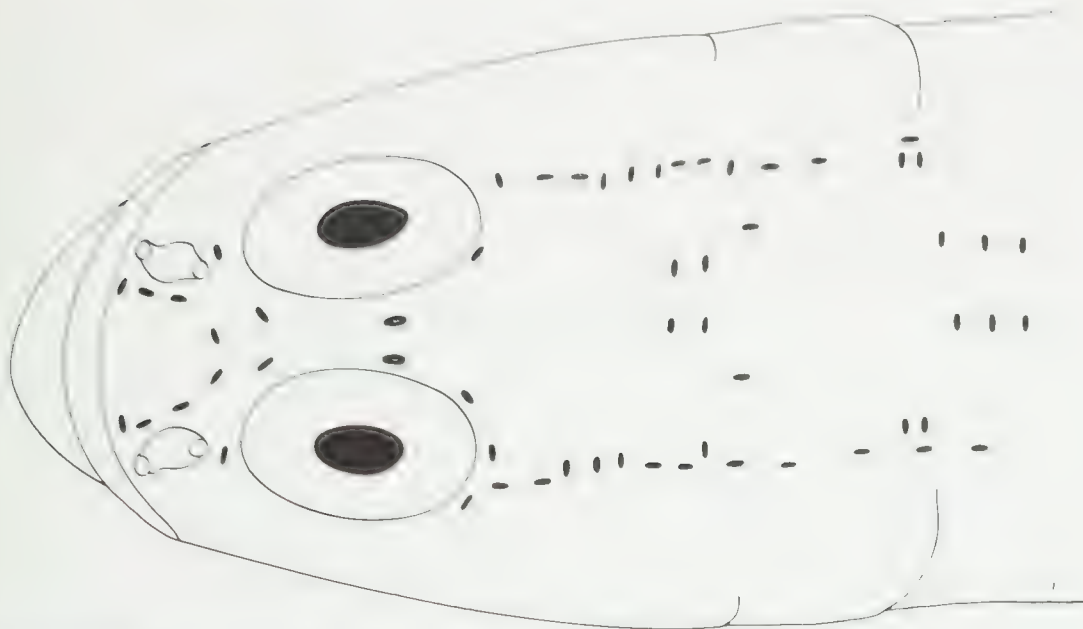


Figure 3. Top view of head showing sensory papillae in *Thalasseleotris adela*, based on 25 mm cleared and stained paratype AMS I.18241-035.

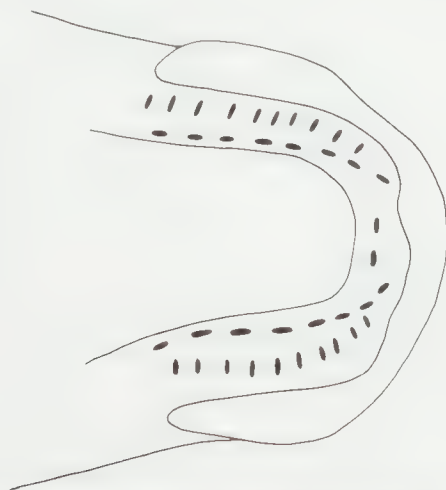


Figure 4. Ventral view of head showing sensory papillae in *Thalasseleotris adela*, based on 25 mm cleared and stained paratype AMS I.18241-035.

only to below anterior margin to middle of pupil; teeth minute, conical, with sharp points, teeth in upper jaw in 4-5 rows anteriorly, tooth patch tapering laterally to 2 rows, teeth in outermost row thicker and slightly longer than teeth in middle rows, innermost teeth anteriorly subequal in length to teeth in outer row; teeth in lower jaw

in 4-6 rows anteriorly, tooth patch tapering laterally to 2 rows, teeth in innermost row longest, teeth in outermost row slightly larger than teeth in middle rows; gill opening very broad, extending forward to below posterior quarter of pupil, gill membranes forming thin and short fold across isthmus; lower limb of first gill arch joined

to inner gill cover by membrane; no spines on operculum; chin with small rounded mental frenum, followed by 2 sensory papillae and with papilla at each side of frenum base. First dorsal fin with broadly rounded margin, third to fifth dorsal spines longest and subequal, fourth or fifth spine often slightly longer than third spine; second dorsal fin subequal in height to first dorsal fin, anal fin slightly shorter in height than first dorsal fin; base of second dorsal fin less than distance from end of second dorsal fin to base of caudal fin; pectoral fins with pointed margin, rays 10-14 (counted from top) longest, fin reaching to above anal fin origin or slightly beyond; caudal fin with rounded posterior margin, fin about two-thirds length of head; separate pelvic fins long, reaching to or slightly beyond urogenital papilla; pelvic rays highly branched, with membranes connecting tips of ray, but with shallow notch between tips of rays; fourth pelvic ray with 7-10 branches in adult, fifth ray with 4-7 branches in adult, fourth ray longest, fifth ray slightly shorter than fourth ray and longer than third ray. Urogenital papilla similar in both sexes, broad at base and tapering slightly distally, with small lobes at tip; males usually with dense concentration of minute black dots covering papilla, distal tip with fringe of minute lobes, lengths of lobes less than one-fifth length of papilla; papilla flattened dorsoventrally. Females with little or no pigment on urogenital papilla, distal end with elongate lobes, lengths about one-third to one-fourth length of papilla; papilla only slightly flattened and more rounded in cross section than that of male.

Sensory papilla; (Figs. 2-4). Lateralis-system papillae prominent on head as short flaps, height of papilla about 1.5 to 2 times width of papilla at base.

Three oval papillae along base of bulbous nasal sac. An LT line of papillae above posterior two-thirds of upper jaw. Irregular LL line from above middle of jaw to below and near posterior end of eye, followed posteriorly by short VT line, followed by LT line of 3 to 5 papillae. Short LT line of 3 to 5 papillae below upper LT line of cheek. Preopercular mandibular series with inner LL line composed of single row of papillae and outer LT line, composed of single row of papillae, with short gap below and just behind posterior end of jaws in the LT line. The preopercular mandibu-

lar series terminates anteriorly at side of chin. Pair of LT papillae at anterior tip of chin. Opercular series with anterior VT line and upper oblique (OT) and separate lower oblique line (OT). LL line from posterior end of eye on nape to just behind operculum interrupted by short sections of LT lines, composed of 1 to 3 papillae, with the LT lines displaced slightly dorsally. Other papillae show on figures 2-4. Little variation noted in 3 cleared and stained specimens examined.

Colour of live female from Victoria (NMV A.3820). Head and body translucent. Dorsal margin of eye with 5 brown transverse bands, as wide as light interspaces; iris gold; pupil reddish-black. Yellowish bar, with minute black dots from anteroventral margin of eye to just behind middle of upper jaw; similar yellowish bar with few scattered minute black dots extending ventrally from eye to posterior margin of jaws; round yellowish spot (subequal to pupil) with dense concentration of minute black spots below posteroventral margin of eye; small (slightly less than pupil diameter) yellowish brown spot at mid-posterior end of preoperculum; top of head with yellowish brown marbling. Small (much less than pupil diameter) spot at upper margin of pectoral base ventroposteriorly to lower pectoral base (band width subequal to pupil diameter). Body with 4 elongate, subcutaneous black blotches along vertebral column, 1 below first dorsal fin, 2 below second dorsal fin and one on caudal peduncle. Faint gray blotch below middle of second dorsal fin. Two minute black spots above anterior half of anal fin, larger black spot above end of fin, 4 slightly larger black spots ventrally on caudal peduncle. Posterior margin of scale edges golden brown. First dorsal fin densely covered with minute black spots, a dense concentration of spots forming vertically elongate black spot at posterior margin of fin below sixth dorsal spine; distal tip of first dorsal fin with thin white margin. Second dorsal fin dusky grey, with thin white distal margin. Other fins almost clear to faintly dusky grey. Vertically elongate black bar behind caudal peduncle on base of caudal fin.

Colour of freshly collected male from Western Australia (WAM P.28293-033). Similar to live

coloration of female, differing in following: lips, eyes, head and pectoral base densely covered with minute black dots. Posterior margins of scales yellowish with dense concentration of minute black dots inside yellowish markings. Yellowish brown spot (subequal to pupil) on upper pectoral base. Dorsal fins densely covered with minute, black dots, giving fin blackish appearance, margins of fins clear. Thin, black, longitudinal stripe at base of first dorsal fin; spot at posterior end of fin black. Anal fin with lower concentration of black dots. Caudal fin clear, but with black vertical bar at base extending onto end of caudal peduncle. Pectoral and pelvic fins densely covered with minute, black dots.

Colour in alcohol. Head and body light to dark brown. Males: Head and body densely covered with minute evenly-spaced black dots, dots denser on top of head and back. Oblique, dark brown bar from anteroventral margin of eye to upper lip; second dark brown, vertical bar from lower margin of eye to posterior end of jaws; short, dark brown, oblique bar from posteroventral margin of eye; bars often obscured by dark head coloration. Dark brown, oval spot in contact with posterior margin of eye. Top of head with very thin, median, longitudinal, black line above front half of operculum; second black, median line immediately before first dorsal spine. Papillae on top of head and nape often with black tips, particularly those immediately before first dorsal fin. Median dark brown, line on caudal peduncle from end of anal fin to base of caudal fin, often broken into a series of short, dark brown lines. Black spot at upper pectoral base dissected by opercular membrane attaching to upper pectoral base. Posterior edges of scales only slightly darker than centres of scales. Fins varying from light dusky grey to almost black. Distal margins of fins lighter than rest of fin, often without pigment. Small, black spot covering most of membrane behind sixth dorsal spine. Dark brown, vertical bar at base of caudal fin. Females: Colour variable. Colour of sensory papilla, vertical bar at base of caudal fin, spot behind eye and spot at upper edge of pectoral base as in males. Minute black dots usually concentrated into spots, mottling and bands; in largest females (over 20 mm SL) dots sometimes uniformly distributed on head and body giving

fish dark brown appearance similar to that of males. In small females (up to 25 mm SL); 3 distinct stripes radiating from eye, 1 from anteroventral margin of eye to and crossing upper lip, second bar extending vertically from eye to below posterior end of jaws, third bar extending almost vertically from posteroventral margin of eye to lower edge of preoperculum; rest of preoperculum and operculum with irregular mottling; top of head with mottling forming 2-4 irregular transverse bands, often darkest at edges; minute, black dots on body concentrated along posterior edges of scales, back often with series of short, oblique (sloping ventroposteriorly) broad, dark brown bars; first band below anterior part of first dorsal fin, second band below posterior end of first dorsal fin, 2 bands below second dorsal fin and 2 bands on caudal peduncle, last band often extending ventrally to lower edge of caudal peduncle, bands on back extending dorsally as oblique bands on to dorsal fins, third oblique band at end of second dorsal fin above first caudal peduncle band; pectoral fin with dark brown, vertical bar anteriorly, followed posteriorly by light area; fins generally translucent, except for oblique bands on dorsal fins and blackspot behind sixth dorsal spine; pectoral fin often with dark brown irregularly shaped spot dorsally near bases of rays. In some larger females, head, body and fins dark brown as in males, but banding on back and on dorsal fins usually discernible.

Distribution and habitat. From Sydney, New South Wales through Victoria, Tasmania and South Australia, to Rottnest Island, Western Australia. Restricted to rocky reef environments, often in silty turbid waters; 1-24 m.

Etymology. From the Greek *adelos* (dim or obscure), referring to its cryptic and often dark habitat.

Remarks. *Thalasseleotris adela* shows considerable geographical variation in pectoral-ray counts (Table 1). Counts from specimens from New South Wales and Western Australia are lower than those from specimens from other states. Analysis of variance, using multiple comparison methods (Scheffe, 1959) indicate that the means from New South Wales and Western Australia do not differ significantly from one another, but

Table 1. Pectoral ray counts and longitudinal scale series counts of populations of *Thalasseleotris adela* from southern Australia.

Pectoral Rays:	Counts					Mean Variance	
	17	18	19	20	21		
New South Wales	1	14	10	1	—	18.4	0.41
Victoria	—	—	1	6	4	20.3	0.42
Tasmania	—	—	10	14	6*	19.9	0.55
South Australia	—	1	2	3	5	20.1	1.09
Western Australia	2	6	11	7	1	19.0	0.96
Longitudinal scale series	22	23	24	25	26	27	
New South Wales	—	3	4	2	—	—	23.9 0.61
Victoria	—	—	1	3	1	1	25.3 —
Tasmania	—	3	7	7	3	1*	24.6 1.14
South Australia	—	—	1	2	—	—	24.7 —
Western Australia	5	3	3	—	—	—	22.8 0.76

both differ significantly from all other southern states ($p < 0.01$). A similar trend also occurs in the longitudinal scale counts (Table 1), but counts were obtained from few specimens, since many had lost scales. Analysis of variance including only samples from New South Wales, Tasmania and Western Australia indicated a highly significant difference between Western Australia and Tasmania ($p < 0.001$). These trends are most likely correlated with temperature, with the lowest counts occurring in the warmest areas, north of 35°S .

Colour varies considerably, usually with large males being darker and more uniformly coloured than females. Small individuals may be very pale. Since the fish apparently can lighten and darken in life, some variation is undoubtedly related to their habitat.

Acknowledgments

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NEW AUSTRALIAN FISHES. PART 12.
A NEW SPECIES OF *EUBALICHTHYS* (MONACANTHIDAE)

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Abstract

Hutchins, J. B., 1987. New Australian fishes. Part 12. A new species of *Eubalichthys* (Monacanthidae). *Mem. Mus. Vict.* 48: 51-52.

Eubalichthys cyanoura is described as new from south-western Australian seas. It is distinguished from the closely related *E. gunnii* (Günther) by differences in coloration and several morphological features.

Introduction

Hutchins (1977) recognised 54 species of monacanthid fishes from Australian seas. One of these, *Eubalichthys gunnii*, was listed with a distribution ranging from Victoria to the southern portion of Western Australia. Subsequently, Hutchins and Thompson (1983) restricted *E. gunnii* to Victoria, Tasmania, and South Australia. They recognised the Western Australian form as a distinct species, its range overlapping with the former in South Australia. This paper describes the western form as new.

Methods were given by Hutchins (1977). The following abbreviations are used: AMS, Australian Museum, Sydney; WAM, Western Australian Museum, Perth; SL, standard length.

***Eubalichthys cyanoura* sp. nov.**

Figure 1

Eubalichthys gunnii.—Hutchins, 1977: 55 (in part).

Eubalichthys species Hutchins & Thompson, 1983: 68, 87, fig. 326.

Material examined. Holotype: Western Australia, Recherche Archipelago, Sandy Hook Island, J.B. Hutchins, speared at 20 m, 7 Apr 1977, WAM P.25762-001 (male, 232 mm SL).

Paratypes. Western Australia. Albany, Big, Grove, Department of Fisheries and Fauna, 6 May 1974, WAM P.24841-001 (159 mm SL); Geographe Bay, M. Walkere, fish trap, 18 Nov 1976, WAM P.28393-004 (156 mm SL); Safety Bay, south of Fremantle, B. Paxman, spear, 13 Apr 1975, WAM P.28865-002 (299 mm SL); AMS I. 26445-001 (323 mm SL); off Fremantle, between Garden and Carnec Islands, J. Braun, handnet, 12 Jan 1977, WAM P.25998-001 (104 mm SL).

South Australia. Yorke Peninsula, Stenhouse Bay, J.B. Hutchins, speared at 8 m, 31 Mar 1981, WAM P.27137-001 (2 specimens, 138-238 mm SL).

Description. Dorsal fin rays 31-35; anal fin rays 32-34; pectoral fin rays 12-13 (mostly 13). Body elongate in male, somewhat deeper in female and juvenile, depth 2.1-2.9 in SL. Lateral profile of snout prominently convex in male, straight to slightly convex in female and juvenile. Ventral flap small. Caudal peduncle without spines or bristles. Skin velvety to rather coarse. Dorsal spine moderate to long (1.4-1.7 in head length), originating over centre to posterior one-third of eye, and partly received by a shallow groove in interdorsal space when depressed; spine with small downward-directed barbs, barbs decreasing in size with increasing SL, becoming obsolete in large individuals. Second dorsal and anal fins elevated anteriorly in male, outer border concave; fins not elevated in female and juvenile, outer border convex. Pelvic fin rudiment small to minute, consisting of 4 encasing scales, located about one-half eye diameter in advance of rear end of pelvis. Reaches a total length of 42 cm (36 cm SL).

Colour in life: Adult—head and body pale green, pale brown to blackish brown, covered with close-packed darker spots; dark brown lines and spots on snout and along anal fin base; mosaic pattern of dark brown to blackish blotches often present on side, or mosaic of pale lines only; 2 whitish bars usually present on



Figure 1. *Eubalichthys cyanoura*, WAM P.27609-001, 309 mm SL, male (non-type).

throat (may be pale and difficult to detect in large males). All fin rays green, integuments of first dorsal and caudal fins bright blue in male, hyaline in female. Juvenile—side of head and body with a mosaic of large dark blotches; spotting develops at about 100 mm SL.

Colour in preservative: base dark brown with markings as described above, except blue fin integuments black.

Distribution. Yorke Peninsula, South Australia (35°14'S, 137°02'E) to Dongara on Western Australia's west coast (29°15'S, 114°56'E).

Etymology. From the Greek *kyanos* (dark blue) and *oura* (tail) referring to the blue caudal fin of the male.

Remarks. *Eubalichthys cyanoura* is very similar in body shape to *E. gunnii*, although the juvenile is not as deep-bodied as similar-sized individuals of the latter species. In addition, the snout profile in lateral view of the juvenile is straight to

convex in *E. cyanoura*, concave in *E. gunnii*. However, the two differ most noticeably in colouration: *E. gunnii* lacks the dark spots and blue fin integuments of *E. cyanoura*. *E. gunnii* also has a network of pale lines on the side, breaking up the ground colour into many small darker blotches. The blotches of *E. cyanoura* are much larger, and arranged in a less obvious reticulate pattern, although in some large males, the pattern of blotches may be faint and therefore difficult to detect.

This species inhabits coastal reefs to 30 m, preferring exposed offshore areas. Juveniles have been found under jetties in coastal embayments.

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NEW AUSTRALIAN FISHES. PART 13. TWO NEW SPECIES OF PLATYCEPHALIDAE

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Abstract

Knapp, L. E., 1987. New Australian fishes. Part 13. Two new species of Platycephalidae. *Mem. Mus. Vict.* 48: 53-55.

Two new species of Platycephalidae from Australian waters are described: *Platycephalus aurimaculatus* sp. nov., a species of the subgenus *Neoplatycephalus* Castelnau which lacks a swim bladder and has more than 80 pored scales in the lateral line; and *Rogadius patriciae*, which lacks an antrorse preopercular spine and has 12 soft dorsal fin rays.

Introduction

There are about 36 described species of flatheads (Platycephalidae) in Australian waters and others awaiting description. The two brief descriptions given here will be expanded upon in future publications of the family.

Platycephalus Bloch

Platycephalus Bloch, 1795: 96 (type species *Platycephalus spathula* Bloch = *Callionymus indicus* Linnaeus by original designation).

Neoplatycephalus Castelnau, 1872: 87 (type species *Neoplatycephalus grandis* Castelnau by original designation).

Platycephalus (Neoplatycephalus) aurimaculatus sp. nov.

Platycephalus sp. Last et al., 1983: 334-335, fig. 28.23.

Material examined. Holotype: Tas. Bass Strait, east of King Island (39°56.41'S, 144°48.054E), 49 m, trawled, RV "Hai-Kung", 3 Feb 1981, NMV (Museum of Victoria) A1404 (290 mm SL).

Paratypes: Vic. Bass Strait, off Cape Otway (39°06.5'S, 143°31.43Z'E), 83 m, trawled, FRV "Hai-Kung", 31 Jan 1981, AMS (Australian Museum, Sydney) I.26328-001, formerly NMV A1389 (333 mm SL) Port Phillip Bay, about 3.2 km W. of Sandringham (37°57'S, 145°E.), 30 Mar 1971, NMV A3733 (232 and 215 mm SL) Bass Strait, trawled, RV "Hai-Kung", Feb 1981, USNM (U.S. National Museum of Natural History) 280181 (318 mm SL).

Platycephalus conatus: Western Australia, off Point Culver, AMS I.18710-007 (160 and 174 mm SL). South Australia, Investigator Strait, AMS I.12393-94 (224 and 234 mm SL).

Platycephalus richardsoni: Victoria, Lakes Entrance, AMS IB.21166 (245 mm SL). Tasmania, Wineglass Bay, AMS I.B507 (440 mm SL).

Diagnosis. *Platycephalus* with enlarged canine teeth on the palatine, dentary, vomer and premaxillary symphysis. More than 80 pored scales in the lateral line, a gill raker count of 1 + 5-7 and lacking a swim bladder.

Description. Dorsal fin rays usually I, VII, I, 14; anal fin rays 14; pectoral fin rays 18-20 (20 in holotype); branched caudal fin rays 12. Pored scales in the lateral line 81-85 (84); number of oblique scale rows slanting backward above the lateral line 88-100 (91); scale pores elongate with a single tube to the exterior. Iris lappet of eye a simple lobe; greatest diameter of orbit about half of snout length. Interopercular flap and swim bladder lacking. Attains a length of at least 550 mm (Last et al., 1983: 335).

Body light grey or brown; dorsal surface of head and back covered with small golden spots; larger gold to orange spots on pelvic and caudal fins; pectoral fin dusky with dark bands on upper half.

Distribution. Bass Strait and South Australia, 49-90 m.

Etymology. From the latin *aureus* (golden) and *macula* (spot), referring to the distinctive golden spots on the body and fins.

Remarks. *Platycephalus aurimaculatus*, *P. richardsoni* Castelnau and *P. conatus* Waite & McCulloch constitute the subgenus *Neoplatycephalus* and are separated from all other species of *Platycephalidae* by the presence of large canine teeth. Characters separating the three species are given in Table 1.

Rogadius Jordan & Richardson

Rogadius Jordan & Richardson, 1908: 630 (type species *Platycephalus asper* Cuvier by original designation).

Rogadius patriciae sp. nov.

Suggrundus sp. 2 Gloerfelt-Tarp et al., 1984: 125, fig.—Sainsbury et al., 1984: 120, fig.

Material examined. Holotype: Western Australia, North-West Shelf. (20°03'-04'S, 116°09'-10'E), 64 m, trawled, RV "Soela" (stn 36), 4 Dec 1979, AMS I.26330-001, (160 mm SL).

Paratypes: Type locality, USNM 280182 (158 mm SL). North-West Shelf (19°14'S, 118°22'E), 88-90 m, trawled, RV "Courageous", 27 May 1978, WAM (Western Australian Museum) P26212-004 (179 mm SL).

Rogadius asper: Hong Kong, off Lema Island, CAS (California Academy of Sciences) 60896 (3, 91-106 mm SL) China, near Swatow, CAS 29058 (101 mm SL).

Rogadius pristiger: Northern Territory, Arafura Sea, (109 and 120 mm SL), Philippines, Mindanao, Nasipit, CAS 29411 (7, 59-122 mm SL).

Rogadius serratus: Indonesia, Lombok, Tanjung Luar, BPBM (Bernice P. Bishop Museum) 30022 (3, 137-153 mm SL).

Diagnosis. Vomerine teeth in 2 separate patches; dorsal soft rays 12; iris lappet bilobed; interopercular flap absent. Number of oblique scale rows

slanting backward above the lateral line about equal to number of pored scales; pored scales about 52, anteriormost 1-15 bearing small spine; scale pores short, with 2 tubes to exterior. Suborbital and infraorbital ridges with fine serrations; preorbital spine lacking; antorbital margin bearing 5-10 denticulations; single stout preocular spine; usually 3 preopercular spines, antrorse spine lacking. Gill rakers 1/5-7, usually 6.

Description. Dorsal fin rays IX-12; anal fin rays 11; pectoral fin rays 21-23 (22 in holotype); branched caudal fin rays 11-12 (12). Pored scales in lateral line 51-53 (53), the anteriormost 7-9 (9) scales bearing small spines; greatest diameter of orbit 1.2-1.4 (1.2) times in snout length; upper preopercular spine somewhat flattened, about 3 times longer than next. Attains at least 191 mm SL.

Body brown above, venter white anteriorly with dark streaking posteriorly; pelvic fins black with outer edge and ray tips white; pectoral fin rays bearing numerous small brown spots on upper part of fin, lower part black except lowest 3 rays which are white; spinous dorsal fin with black marginal band; soft dorsal fin with small black spots on rays; anal fin whitish with dark basal band becoming black posteriorly; caudal fin white with 4 or 5 dark blotches on upper edge and 2 or 3 elongate black bars posteriorly.

Distribution. Western Australia, North-West Shelf, 65-100 m.

Etymology. Named in honour of Patricia J. Kailola in recognition of her many contributions to the knowledge of the fishes of north-western Australia and southern Indonesia.

Table 1. Comparison of the three species of *Platycephalus* (*Neoplatycephalus*)

Character	<i>P. conatus</i>	<i>P. richardsoni</i>	<i>P. aurimaculatus</i>
Pored lateral line scales	72-78	64-74	81-85
Oblique scale rows	76-83	82-85	88-100
Gill raker count	1-2+7-9	3+10-12	1+5-7
Swim bladder	Present	Present	Absent

Remarks. Four species are here provisionally assigned to the genus *Rogadius* Jordan & Richardson. *Rogadius patriciae* sp. nov. is separated from *R. pristiger* (Cuvier, 1829) and *R. asper* (Cuvier, 1829) by lacking an antrorse preopercular spine. It is separated from *R. serratus* (Cuvier, 1829) by having 12 rather than 11 soft dorsal fin rays.

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NEW AUSTRALIAN FISHES. PART 14. TWO NEW SPECIES OF *DASYATIS* (DASYATIDIDAE)

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Abstract

Last, P.R. 1987. New Australian fishes. Part 14. Two new species of *Dasyatis* (Dasyatidae). *Mem. Mus. Vict.* 48: 57-61

Two new stingrays, *Dasyatis leylandi* sp. nov. and *D. annotatus* sp. nov., are described. These species resemble the widely distributed and sympatric *D. kuhlii* (Müller & Henle) but differ in colour pattern and external morphology. Unlike *D. kuhlii* the new species lack blue spots on the dorsal surface of the disc. *D. annotatus* is uniformly dull green dorsally and has a distinctive medial series of thorns on the tail. *Dasyatis leylandi* has a dorsal coloration consisting of a network of dark yellowish or brownish reticulations superimposed on a paler background and lacks tail thorns.

Introduction

The genera and species of stingrays (Family Dasyatidae) are currently under review. The genus *Dasyatis* Rafinesque presently contains several species complexes, each of which may be distinct at the generic level. Osteological studies in progress indicate that a complex of species, similar to the widely distributed *D. kuhlii* (Müller & Henle), may be referable to *Amphotistius* Garman, considered by recent authorities to be a junior synonym of *Dasyatis* (Compagno and Heemstra, 1984; Masuda et al., 1984). To avoid further confusion of the nomenclature, however, two new species described herein from north-western Australia are tentatively referred to *Dasyatis*.

Bracketed morphometrics provided in the diagnoses represent values for the holotypes. Material is lodged in the collections of CSIRO Division of Fisheries Research, Hobart, and the Museum of Victoria, Melbourne (NMV).

Dasyatis

Dasyatis Rafinesque, 1810: 16.

Type species. Dasyatis ujo Rafinesque, by monotypy.

Dasyatis annotatus sp. nov.

Figure 1

Dasyatis sp. 1. Gloerfelt-Tarp & Kailola, 1984: 37.

Amphotistius sp. 1. Sainsbury, Kailola & Leyland, 1985: 48, fig on opposing page.

Material examined. Holotype: Western Australia, Northwest Shelf, M. Baron, 1984, CSIRO T449 (male, 212 mm disc width).

Paratypes: Northern Territory, north of Vansittart Bay (13°25'S, 126°19'E), 62 m, trawled, FRV "Soela", 26 Jun 1980 (stn S05/80/18), CSIRO CA1248 (immature male, 191 mm disc width); north of Groote Eylandt, prawn trawl, 28 Jun 1981, CSIRO CA2404 (female with pup, 196 mm disc width).

Arafura Sea, 46 m, trawled, M. Baron, 11 Nov 1983, CSIRO T691 (female, 242 mm disc width) and T695 (male, 209 mm disc width); 09°47'S, 136°20'E, 50 m, trawled, "Pao Yuan No. 1", M. Baron, 22 Feb 1982, CSIRO T694 (female, 220 mm disc width) and T696 (female, 234 mm disc width); M. Baron, Mar 1983, CSIRO T697 (male, 212 mm disc width).

Diagnosis. Disc moderately flat, rhomboidal, width 1.12-1.28 (1.21) times length; pectoral apices narrowly rounded; preorbital snout broadly triangular, margin slightly concave, tip pointed. Disc surface largely naked, denticles confined to separate, single series on disc and tail; denticles on disc small, retrorse, closely spaced, 4-13 (9) (number proportional to size) on midline behind spiracles; 0-4 (3) (rarely absent) similar denticles situated on midline of tail before sting. Eyes small, size not sexually dimorphic; distance from anterior margin of eye to posterior apex of spiracle



Figure 1. *Dasyatis annotatus*, paratype, CSIRO CA 1248.

cle 2.05-2.39 (2.27) in preorbital snout length. Mouth small, 2 elongate papillae on floor; labial furrows and lower labial folds prominent, internasal flap skirt-shaped, papillose, margin fringed; overlapped laterally by inner lobe of nostril; connected anteriorly by narrow membrane. Pelvic

fins moderately large, lateral apices extended. Tail slender, length variable but longer than disc when undamaged; slightly depressed to rounded in cross-section anteriorly, tapering quickly after sting insertion; generally with 2 stings; ventral cutaneous fold low, elongate; dorsal fold short,

situated behind sting, subequal in height to ventral fold. Reaches a total width of at least 242 mm.

Dorsal surface mostly uniform dull green; slightly darker transverse bars situated immediately before eye, through eye and across snout angle; pair of small dark patches situated either side of midline behind spiracles. Tail with variable black and white bands behind sting; apex dark in undamaged specimens; ventral cutaneous fold pale (rarely dusky). Ventral surface pale. Preserved colour: dorsal surface brownish, darker bars and patches often indistinct, tail banding persistent; ventral surface whitish or yellowish.

Distribution. Timor and Arafura Seas, off northern Australia, at depths of 46-62 m.

Etymology. From the Latin combination *an-* (not) and *-notatus* (marked) in allusion to the lack of distinct ocelli, spots or blotches.

Remarks. This species is a member of the *Dasyatis kuhlii* species complex. Unlike sympatric congeners, *D. kuhlii* and *D. leylandi*, *D. annotatus* lacks a distinctive pattern of spots or reticulations on the dorsal surface but has a prominent medial series of thorns on the tail.

***Dasyatis leylandi* sp. nov.**

Figure 2

Amphotistius sp. 2. Sainsbury, Kailola and Leyland, 1985: 48, fig on opposite page.

Material examined. Holotype: Western Australia, north of Forestier Island (19°28'S, 118°24'E), 54 m, bottom trawl, FV "Soela" (stn S02/82/1), 26 Mar 1982, CSIRO CA2806 (male, 189 mm disc width).

Paratypes: Western Australia, north of Dampier Archipelago (20°17'S, 116°25'E), 11 May 1983, CSIRO T674 (female, 213 mm disc width), CSIRO T675 (pup of T674); north-west of Port Hedland (20°00'S 117°55'E), 34m, trawled, FV "Soela" (stn S04/82/89), 22 Aug 1982, CSIRO CA3246 (male, 191 mm disc width); north-east of Monte Bello Islands (19°49'S 116°05'E), 70 m, trawled, FV "Soela" (stn S05/82/12), 23 Sep 1982, CSIRO CA4282 (immature male, 146 mm disc width); west of Dampier Archipelago (19°51'S 116°56'E), 62 m, trawled, FV "Soela" (stn S04/82/57), 16 Aug 1982, CSIRO CA3232 (immature male, 199 mm disc width); north of Port Walcott (19°44'S 117°12'E), 68 m, mesh wing trawl, FV "Soela" (stn S04/80/21), 2 Jun 1980, CSIRO CA1249 (female, 218 mm disc width); north of Dampier Archipelago (20°07'S 116°04'E), 50 m, trawled, "Charng Sheng", 6 May 1982, CSIRO T683 (female, 242 mm disc width), T681

(female, 252 mm disc width) and T676 (female, 190 mm disc width); north-west of Dampier (20°10'S 116°04'E), 60 m, otter trawl, collected by M. Gomon and N. Sinclair, 9 Mar 1981, NMV A1869 (immature male, 197 mm disc width).

Diagnosis. Disc moderately flat, rhomboidal, width 1.13-1.26 (1.26) times length; pectoral apices narrowly rounded; preorbital snout broadly triangular, margin straight or slightly concave, tip feebly pointed to rounded. Disc surface largely naked, single series of 1-9 (2) small, retrorse, closely spaced denticles situated on midline behind spiracles; no denticles on tail. Eyes moderately small, size not sexually dimorphic; distance from anterior margin of eye to posterior apex of spiracle 1.94-2.31 (1.94) in preorbital snout length. Mouth small, 2 elongate papillae on floor; labial furrows and lower labial folds prominent. Internasal flap skirt-shaped, papillose, margin fringed; overlapped laterally by inner lobe of nostril; connected anteriorly by narrow membrane. Pelvic fins moderately large, lateral apices extended. Tail slender, length variable but longer than disc when undamaged; slightly depressed to rounded in cross-section anteriorly, tapering quickly after sting insertion; generally with 2 stings; ventral cutaneous fold low, elongate; dorsal fold short, situated behind sting, subequal in height to ventral fold. Reaches a total width of at least 252 mm.

Dorsal surface pale brown or yellowish, superimposed with a network of darker reticulations; sometimes with light scattering of pale speckles; pattern slightly darker in sub-, pre- and interorbital areas; pair of small faint patches sometimes situated either side of midline behind spiracles. Tail with variable black and white bands behind sting; apex pale in undamaged specimens; ventral cutaneous fold pale with dark margin. Ventral surface pale. Preserved colour: dorsal surface pale brown, darker network distinct although sometimes faint; tail banding persistent; ventral surface whitish or yellowish.

Distribution. Western Australia, off Dampier at depths of 34-70 m.

Etymology. Named in honour of Mr Guy Leyland who was responsible for supplying most of the Australian material to be used in a revision of this genus.



Figure 2. *Dasyatis leylandi*, specimen from type locality (Sainsbury et al., 1985).

Remarks. This new species closely resembles *Dasyatis kuhlii* but, in addition to having a yellowish brown network pattern on the dorsal surface of the disc rather than an array of large blue spots, the new species has a relatively longer snout and smaller eye.

Acknowledgements

I am particularly indebted to Mr M. Baron, a foreign fishing observer for the Department of Primary Industry, for collecting type material of *Dasyatis annotatus*. My thanks also go to the scientific staff and crew of RV "Soela" who collected other type material.

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NEW AUSTRALIAN FISHES. PART 15. NEW SPECIES OF *TRYGONOPTERA* AND *UROLOPHUS* (UROLOPHIDAE)

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Abstract

Last, P.R. and Gomon, M.F. 1987. New Australian fishes. Part 15. New species of *Trygonoptera* and *Urolophus* (Urolophidae). *Mem. Mus. Vict.* 48: 63-72.

The following Australian species of stingaree are described herein: *Trygonoptera ovalis*, *T. personata*, *Urolophus flavomosaicus*, *U. mitosis*, *U. orarius* and *U. westraliensis*.

Introduction

The batoid family, Urolophidae, presently contains 11 described Australian species (McKay, 1966; Dixon, 1969). Six new species of the genera *Trygonoptera* and *Urolophus*, are added to this list. A revisionary study of the family is currently being undertaken.

Type specimens are deposited in the Australian Museum, Sydney (AMS), CSIRO Division of Fisheries, Hobart (CSIRO), Museum of Victoria, Melbourne (NMV), South Australian Museum, Adelaide (SAMA) and Western Australian Museum, Perth (WAM).

Trygonoptera

Trygonoptera Müller & Henle, 1841: 174.

Type species. Trygonoptera testacea Müller & Henle, by monotypy.

Discussion. Most Australian authors have regarded *Trygonoptera* as a synonym of *Urolophus*. *Trygonoptera* was originally used for those members of the family that have a dorsal fin. While this character is unreliable for separating the genera, there are major differences between the two in oro-nasal and skeletal structures.

Trygonoptera ovalis sp. nov.

Figure 1

Urolophus species 1. Hutchins & Thompson, 1983: 16, fig. 41.

Material examined. Holotype: Western Australia, Great Australian Bight, south of Red Rocks Point (32°24'S, 127°30'E),

30 m, demersal trawl, FRV "Courageous", stn 032/0606, 3 Mar 1978, CSIRO CA521 (female, 210 mm disc width).

Paratypes: Western Australia, Great Australian Bight, east of Low Point (32°01'S, 128°30'E), 36-38 m, demersal trawl, FRV "Courageous", stn 031/0589, 17 Feb 1978, CSIRO CA525 (immature male, 208 mm disc width); south of Scorpion Bight (32°30'S, 126°43'E), 35-36 m, FRV "Soela", stn S05/81/18, 6 Dec 1981, NMV A2817 (female, 302 mm disc width), NMV A2818 (female, 338 mm disc width); south of Scorpion Bight (32°24'S, 126°30'E), 30-40 m, demersal trawl, FRV "Courageous", stn 032/0604, 3 Mar 1978, CSIRO CA510 (immature male, 186 mm disc width); Geographe Bay, Quindalup (33°38'S, 115°09'E), speared, P. Good, 23 Jan 1981, WAM P27037-001 (immature male, 151 mm disc width); south of Mandurah, 42-43 m, FV "Kaiyo Maru 71", D. Heald, 27 Aug 1979, WAM P27285-001 (female, 160 mm disc width); Houtman Abrolhos Group (28°29'S, 113°47'E), 4-6 m, rotenoned, N. Sinclair, 16 Apr 1982, WAM P27585-002 (female, 141 mm disc width).

Diagnosis. Disc almost oval, slightly longer than wide; broadest part 1 to 3 eye diameters behind level of spiracles; anterior profile obtuse. Snout fleshy, tip not extended. Eye of moderate size, 17-22% preocular snout length. Posterior margin of spiracle rounded or angular. Mouth small; about 4 minute papillae on floor. Internasal flap skirt-shaped, posterior angle not extended into distinct lobe. Posterolateral border of nostril forming a broad flattened and fleshy lobe. Tail broad, rounded in cross-section; of moderate length, 75-100% disc length; lateral cutaneous folds absent; dorsal fin small; caudal fin relatively large, lanceolate. Reaches a total length of at least 610 mm.

Dorsal surface greyish to greyish brown; dark markings below, in front of and between eyes; often with a dark stripe extending to snout tip (obvious on juveniles); paired dark patches near

centre of disc extending as stripes posteriorly along disc and tail, sometimes darkish areas obscure; pale along midline. Caudal fin greyish or black. Ventral surface white or yellow; tail and margins of disc and ventral fins mostly dark.

Distribution. Southern coast of Western Australia in depths to 43 m.

Etymology. From the Latin *ovalis* (oval), referring to the distinctive disc shape.

Remarks. This species differs from other *Trygonoptera* which have a dorsal fin, *T. testacea* Müller & Henle and *T. personata* sp. nov., in having a more ovate disc and in possessing a pair of longitudinal stripes on the disc and tail.

Trygonoptera personata sp. nov.

Figure 2

Urolophus species 2. Hutchins & Thompson, 1983: 16, fig. 42.

Material examined. Holotype: Western Australia, north-east of Cape Naturaliste (33°01'S, 115°10'E), 70 m, trawled, FRV "Hai Kung", 23 Apr 1981, CSIRO H46 (male, 231 mm disc width).

Paratypes: Western Australia, off Perth, Cottesloe Banks, (31°59'S, 115°45'E), trawled, FV "Peron", R. J. McKay, 17 Apr 1960, WAM P8194-001 (immature male, 165 mm disc width); north-east of Rottnest Island, 31-36 m, trawled, FV "Bluefin", R. J. McKay, 18 Sep 1965, WAM P14104-001 (female, 193 mm disc width); south-west of Shark Bay (27°02'-26°55'S, 113°02'-01'E), 115-160 m, 63 m otter trawl, FRV "Hai Kung", M. Gomon and N. Sinclair, 2 Mar 1981, NMV A1820 (2 females, 188-208 mm disc width), NMV A1821 (2 males, 190-202 mm disc width); Shark Bay (25°21'S, 113°44'E), R. J. McKay, 1958, WAM P12034-001 (female, 173 mm disc width).

Diagnosis. Disc not especially broad, subcircular, mostly wider than long; broadest part slightly more than eye diameter behind level of spiracles; anterior profile obtuse. Snout fleshy, tip not extended. Eye of moderate size (21-28% preocular snout length). Posterior margin of spiracle mostly angular. Mouth small; 3-4 papillae on floor. Internasal flap skirt-shaped, posterior angle not extended into distinct lobe. Posterolateral border of nostril forming a broad flattened, fleshy lobe. Tail slightly depressed to rounded in cross-section; of moderate length (67-86% disc length); lateral cutaneous folds absent; dorsal fin small; caudal

fin lanceolate in young, shorter and broader in adults. Reaches a total length of at least 470 mm.

Dorsal surface yellowish brown to grey with dark markings around eyes and central dark blotch on disc; markings frequently connected medially and laterally by narrow longitudinal stripes. Caudal fin margin and dorsal fin black in young, greyish in adults. Ventral surface white or yellow, with slightly darker lateral margins.

Distribution. Known to occur between Bunbury and Shark Bay, Western Australia in depths to 160 m.

Etymology. From the Latin *personatus* (masked), referring to the mask-like appearance of the dark pattern adjacent the eyes.

Remarks. Readily distinguished from the sympatric congeners, *T. ovalis* sp. nov. and *T. mucosa* (Whitley), by the colour pattern, disc shape and dorsal fin sizes.

Urolophus

Urolophus Müller & Henle, 1837: 17.

Type species. *Raja cruciata* Lacepède, by monotypy.

Discussion. More study is required before the extent of this genus is fully understood.

Urolophus orarius sp. nov.

Figure 3

Material examined. Holotype: South Australia, Investigator Strait (35°20'S, 137°50'E), 20 m, trawled, FV "Ruby H", H. Larson and D. Blake, 14 Mar 1978, AMS L20194-043 (female, 165 mm disc width).

Paratypes: South Australia, same data as holotype, AMS L20194-044 (immature male, 138 mm disc width); Great Australian Bight, off Venus Bay, 36 m, 11 Apr 1984, SAMA jar no. 1187 (2 immature males, 120-148 mm disc width); off Venus Bay, 33-46 m, June 1982, SAMA jar no. 1647 (2 specs., 77 mm disc width); south of Fowlers Bay (33°46'S, 133°30'E), 36.4 m, 28 Feb 1981, SAMA jar no. 403 (2 females, 100-110 mm disc width); south of Evans Island, 4 April 1982, SAMA jar no. 1079 (male, 175 mm disc width).

Diagnosis. Disc broadly subcircular, slightly wider than long; broadest part more than eye diameter behind spiracles; anterior margin obtuse. Snout tip rarely extended. Eye moderately large (28-34% preocular snout length). Posterior margin of spiracle rounded. Mouth moderately large; 4-5 papillae on floor. Internasal flap skirt-shaped, posterior angle not extended into distinct



Figure 1. *Trygonoptera ovalis*, holotype, CSIRO CA521.



Figure 2. *Trygonoptera personata*, holotype, CSIRO H46.



Figure 3. *Urolophus orarius*, holotype, AMS I.20194-043.

lobe. Posterolateral border of nostril forming weak knob, not forming broad flattened lobe. Tail rounded in cross-section; moderately elongate (72-80% disc length); lateral cutaneous folds and

dorsal fin absent; caudal fin lanceolate. Reaches a total length of at least 310 mm.

Dorsal surface greyish to brown; darker areas around eyes extending onto back; dark blotches

situated centrally on pectoral fins and at bases of pelvic fins; caudal and pelvic fins of juveniles dark; general pattern more evident in small specimens. Ventral surface pale, margins greyish brown to black; lower surface of tail pigmented, mostly dark.

Distribution. Known only from the Great Australian Bight off South Australia where it has been trawled in depths of 20-50 m.

Etymology. From the Latin *orarius* (of the coast), in allusion to the primary vernacular "coastal stingaree".

Remarks. This species is similar in general morphology to the allopatric congeners, *Urolophus cruciatus* (Lacepède) and *U. sufflavus* Whitley, but differs from them in colour pattern and in the relative lengths of the tail and caudal fin lobe. *Urolophus orarius* lacks a dark median stripe, which is always present in *U. cruciatus* and sometimes present in *U. sufflavus* but possesses a large dark blotch near each pelvic fin base that is absent in *U. sufflavus*. *U. orarius* has a relatively longer tail and longer caudal fin, than either of these species.

***Urolophus mitosis* sp. nov.**

Figure 4

Urolophus sp.3. Sainsbury et al., 1985: 54, fig. opposite.

Material examined. Holotype: Western Australia, north of Forestier Is. (18°39'S, 117°53'E), 200 m, trawled, FRV "Soela", stn SO2/82/15, 2 Apr 1982, CSIRO CA2874 (male, 145 mm disc width).

Paratypes: same data as holotype, CSIRO CA2875 (female, 165 mm disc width), CSIRO CA2876 (male, 130 mm disc width), CSIRO CA2877 (male, 150 mm disc width), CSIRO 11574 (prenatal male from CA2875, 78 mm disc width).

Diagnosis. Disc subcircular, slightly wider than long; broadest about eye diameter behind spiracles; anterior margin obtuse. Snout tip slightly extended. Eye large (33-43% preocular snout length). Posterior margin of spiracle rounded or acute. Mouth moderately large; 3-4 papillae on floor. Internasal flap skirt-shaped, posterior angle extended into distinct lobe. Posterolateral border of nostril flat or forming weak nob, not forming broad flattened lobe. Tail moderately depressed, elongate (85-104% disc length); lateral

cutaneous folds weak; dorsal fin absent; caudal fin lanceolate. Reaches a total length of at least 290 mm.

Dorsal surface of disc pale green with several large, widely-spaced granulated blotches and stripes, reddish brown near margin; blotches and stripes pale blue, mostly variable in shape but regular in position, bordered by and mostly covered with dark blue mitotic granulations. In preserved specimens dorsal surface becoming pale yellow, granulations remaining obvious. Ventral surface pale.

Distribution. Occurs off Forestier Island, north-western Australia in depths of 200 m.

Etymology. From the Greek *mitos* (thread), with reference to the distinctive granular patterns of the blotches and stripes.

Remarks. This species is immediately recognisable by its characteristic colour pattern. Other members of this genus, *U. expansus* McCulloch and *U. viridis* McCulloch, which are larger southern and eastern Australian relatives respectively, also have a skirt-shaped internasal flap, cutaneous folds on the tail and lack a dorsal fin. The dorsal coloration of *U. viridis* is uniform green, whereas *U. expansus*, while having a few pale transverse bands, lacks dark markings.

***Urolophus flavomosaicus* sp. nov.**

Figure 5

Urolophus sp. 2. Sainsbury et al., 1985: 52, fig. opposite.

Material examined. Holotype: Western Australia, north of Port Hedland (18°20'S, 118°27'E), 202 m, bottom trawl, FRV "Soela", stn SO2/82/13, 2 Apr 1982, CSIRO CA2867 (male, 325 mm disc width).

Paratypes: Western Australia, south-west of Shark Bay (27°07'-01'S, 112°49'-48'E), 238-248 m, 63 m otter trawl, FRV "Hai Kung", M. Gomon and N. Sinclair, 3 Mar 1981, NMV A1810 (immature male, 218 mm disc width); same data as holotype, CSIRO CA2866 (female, 197 mm disc width), CSIRO CA2868 (immature male, 195 mm disc width), CSIRO CA2869 (female, 274 mm disc width).

Diagnosis. Disc quadrangular, much wider than long; broadest about 1.5 eye diameters behind spiracles; anterior margin broadly rounded. Snout tip slightly extended. Eye small (21-28% preocular snout length). Posterior margin of spiracle acute. Mouth large; about 8 very short papillae on floor. Internasal flap skirt-shaped,



Figure 4. *Urolophus mitosis*, holotype, CSIRO CA2874

posterior angle not lobed. Posterolateral border of nostril flat or forming weak nob, not forming broad flattened lobe. Tail moderately depressed; short (67-79% disc length); lateral cutaneous folds weak, sometimes inobvious; dor-

sal fin present; caudal fin lanceolate. Reaches a total length of at least 325 mm.

Dorsal surface yellowish with numerous paler spots encircled by darker yellowish brown rings; spots almost regularly spaced, sometimes inter-



Figure 5. *Urolophus flavomosaicus*, holotype, CSIRO CA2867.

spersed with pale narrow reticulations, largest on central disc.

Distribution. Occurs off Port Hedland, Western Australia in depths to 250 m.

Etymology. Derived from the Latin *flavus* (yellow) and *mosaicus* (mosaic), with reference to the distinctive colour pattern.

Remarks. Among the largest of tropical Australian stingarees, this species closely resembles the temperate *U. bucculentus* Macleay. Apart from morphometric differences, these species have very different colour patterns. *Urolophus bucculentus* is either uniform yellowish or brownish and, although it may be covered in fine reticulations and spots, not forming a broad mosaic pattern.



Figure 6. *Urolophus westraliensis*, holotype, CSIRO CA2870.

Urolophus westraliensis* sp. nov.*Figure 6**

Urolophus sp. 1. Sainsbury et al., 1985: 52, fig. opposite.

Material examined. Holotype: Western Australia, north of Port Hedland (18°20'S, 118°27'E), 202 m, bottom trawl, FRV "Soela", stn SO2/82/13, 2 Apr 1982, CSIRO CA2870 (male, 192 mm disc width).

Paratypes: Western Australia, Northwest Shelf, off Dampier (19°17'S, 116°16'E), 170-172 m, trawled, FRV "Courageous", B. Hutchins, 16 May 1978, WAM P26193-006 (female, 225 mm disc width); north of Port Hedland (18°38'S, 118°02'E), 182 m, trawled, FRV "Soela", stn S03/83/26, 6 Jun 1983, CSIRO CA4195 (female, 143 mm disc width); south-west of Imperieuse Reef (18°24'S, 118°31'E), 154 m, bottom trawl, FRV "Soela", stn S02/82/8, 28 Mar 1982, CSIRO CA2802 (male, 166 mm disc width), CSIRO CA2803 (female, 196 mm disc width), CSIRO CA2804 (male, 171 mm disc width); same data as holotype, CSIRO CA2871 (male, 196 mm disc width), CSIRO CA2872 (male, 189 mm disc width); west of Buccaneer Archipelago (15°08'S, 121°40'E), 204-210 m, FRV "Courageous", K. Sainsbury, 26 Jun 1978, WAM P26262-007 (male, 182 mm disc width).

Diagnosis. Disc subcircular, slightly wider than long; broadest about eye diameter behind spiracles; anterior margin obtuse. Snout tip slightly extended. Eye small (22-28% preocular snout length). Posterior margin of spiracle mostly rounded. Mouth moderately large; 5-6 small papillae on floor. Internasal flap skirt-shaped, posterior angle extended into distinct lobe. Posterolateral border of nostril flat or forming weak nob, not forming broad flattened lobe. Tail moderately depressed; short (66-80% disc length); lateral cutaneous folds barely noticeable; dorsal fin absent, or reduced to a low fold; caudal fin short, mostly broad. Reaches a total length of at least 355 mm.

Dorsal surface uniformly pale yellow to light brown, lacking spots or other darker markings. Ventral surface pale.

Distribution. Occurs on the outer continental shelf of north-western Australia in depths of 150-210 m.

Etymology. Named after the Australian state in which this species occurs.

Remarks. This species is closely allied to the sympatric *U. mitosis* sp. nov., but has a relatively shorter tail, a smaller eye and a uniform colour pattern.

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NEW AUSTRALIAN FISHES. PART 16.
A NEW SPECIES OF *CRAPATALUS* (LEPTOSCOPIDAE)

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Abstract

Last, P.R. and Edgar, G.J. 1987. New Australian fishes. Part 16. A new species of *Crapatalus* (Leptoscopidae). *Mem. Mus. Vict.* 48: 73-74.

A sandfish, *Crapatalus munroi*, is described from southern Australia. It can be distinguished from other Australian species by its deeper body form and by the presence of scales on the lower half of the pectoral fin.

Introduction

Three members of the trachinoid family Leptoscopidae, have been recorded from Australian waters. *Lesueurina platycephala* Fowler, which may be a senior synonym of *Crapatalus arenarius* McCulloch, is found commonly in exposed beach habitats of southeastern Australia.

The type locality of *Leptoscopus macropygus* (Richardson) is recorded as Port Jackson, New South Wales but no Australian specimens have been seen since. This species occurs commonly off New Zealand and it is likely that Richardson's material became mixed at some stage.

The third, an undescribed species of *Crapatalus*, has been documented (Last, Scott and Talbot, 1983) and is formally described herein. The authors are presently revising the family.

Type specimens are deposited in the CSIRO Division of Fisheries, Hobart (CSIRO) and the Museum of Victoria, Melbourne (NMV)

***Crapatalus* Günther**

Crapatalus Günther, 1861: 86.

Type species. Crapatalus arenarius McCulloch (monotypy).

***Crapatalus munroi* sp. nov.**

Figure 1

Crapatalus sp. Last, Scott & Talbot, 1983: 425, fig. 30.95.

Material examined. Holotype, Tasmania. Verona Sands, D'En-

trecaesteaux Channel (43°17'S, 147°09'E), 1 m, beach seined, P.R. Last, 1978, CSIRO H636 (101 mm S.L.).

Paratypes. Tasmania. Chinamans Bay, Maria Island (43°39'S, 148°02'E), 1 m, beach seined, P.R. Last, 10 Apr 1977, CSIRO H640-01 (2 specimens, 41-52 mm S.L.). Flinders Island, dredged, J. Grant, 11 May 1977, CSIRO H638' (1 specimen, 58 mm S.L.). Hopetoun Beach, Dover, D'Entrecasteaux Channel (43°19'S, 147°01'E), 1 m, beach seined, P.R. Last and R. Green, 19 Jun 1977, CSIRO H639-01 (1 specimen, 63 mm S.L.).

Victoria. Portsea, Port Phillip Bay, 2 m, handnet, R. H. Kuiter, 13 Jun 1981, NMV A3320 (3 specimens, 79-98 mm S.L.). Portsea Wharf, Port Phillip Bay, 3 m, by hand, R.H. Kuiter, Dec 1981, CSIRO H637-01 (4 specimens, 41-82 mm S.L.). Mordialloc, G. Mason, 4 July 1902, NMV R11958 (1 specimen, 93 mm S.L.).

Diagnosis. Dorsal-fin rays 36-38; anal-fin rays 36-37; ventral-fin rays 1.5; pectoral fin rays 21-23; lateral line scales 46-49.

Body elongate, compressed, tapering to caudal fin; maximum depth 4.0-5.2 in S.L.; head bulbous, rounded or slightly compressed, about 4 times wider than the body. Fimbriae simple on jaws, sometimes bifurcated on operculum, not papillated, 34-42 on lower jaw; 23-31 on upper jaw; 13-19 on operculum. Eyes dorsal, situated close to snout; interorbital distance short, less than three quarters transverse eye diameter. Mouth almost vertical; maxilla extending to below anterior margin of eye. Teeth small, caniniform; in narrow bands in jaws and on palatines; two separate patches present on vomer. Scales cycloid, large, covering trunk, and pectoral and caudal fin

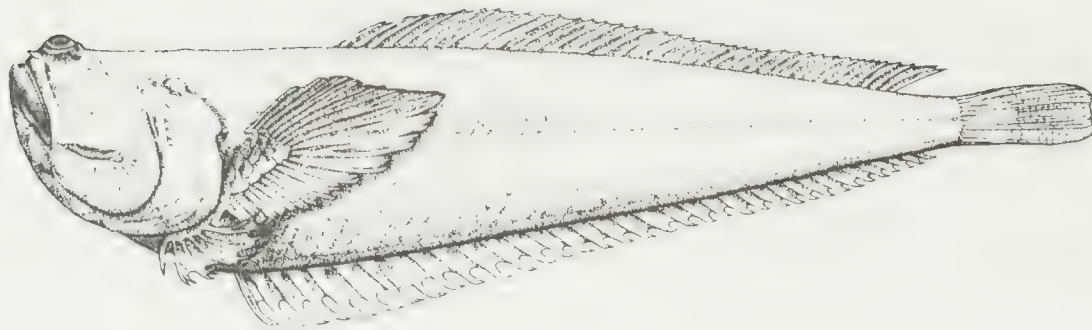


Figure 1. *Craptalus munroi* sp. nov.

bases; head naked except for small scaly patches on upper preoperculum and operculum; prepelvic area scaled. Dorsal and anal fin bases elongate, former shorter; rays short, simple. Pectoral fin large (21.7-24.4% S.L.), pointed; rays 8-9 generally longest, decreasing in length ventrally; upper part only slightly incised, rays mostly bifurcated; lower part moderately incised, rays divided into 4-6 portions. Pelvic fins jugular; inserted close to pectoral fin bases, shortest distance between them less than half interpelvic distance; extending posteriorly well behind anus. Caudal fin short, truncate. Isthmus without lapets. Reaches a total length of at least 115 mm.

Body white; upper half densely covered with numerous small, irregular brownish to golden markings which extend onto upper pectoral, dorsal and caudal fins. Preserved specimens yellowish or pink with peppery markings, mostly faint; some specimens immaculate.

Distribution. Off Victoria and Tasmania where, as a burying species, it lives mainly in soft sediments near the coast.

Etymology. In honour of Mr I.S. Munro, an eminent student of ichthyology, who discovered the species.

Comparisons. This species can be distinguished from *Lesueurina platycephala* by its deeper body form and the presence of scales on the lower part of the pectoral fin. A New Zealand species, *Craptalus novaezelandiae* Günther, is similar in form but has prominent cutaneous flaps on the isthmus and papillated oral fimbriae.

Acknowledgments

We would like to extend our gratitude to Mr Rudie Kuiter who has provided photographs, type material and biological information on members of this family.

Reference

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NEW AUSTRALIAN FISHES. PART 17.
NEW SPECIES OF *GADELLA* AND *PHYSICULUS* (MORIDAE)

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Abstract

Paulin, C.D., 1987. New Australian fishes. Part 17. New species of *Gadella* and *Physiculus* (Moridae). *Mem. Mus. Vict.* 48: 75-77.

The following species are here described: *Gadella norops* and *Physiculus therosideros*. *G. norops* has a very small light organ placed closer to the anus than the interventral line, elongate ventral fins, second dorsal ray count more than 72 and an inter-orbital width greater than 7.9% SL. *P. therosideros* has a large light organ placed closer to the anus than the interventral line, equal sized teeth and a lateral line reaching the origin of the second dorsal fin.

Introduction

Morid fishes of the genera *Gadella* and *Physiculus* are distributed in all tropical, subtropical and warm temperate regions of the world's oceans, in depths of 40-1500 m, usually 100-600 m. Both genera are currently being revised on a worldwide basis: *Gadella* is represented by six nominal and two undescribed species; *Physiculus* is represented by 25 nominal and nine undescribed species (Paulin, in prep). One new species of *Gadella*, and one new species of *Physiculus* which form the basis of the present account, are found in Australia in addition to four known species of *Physiculus*: *P. longifilis* Weber, *P. luminosa* Paulin, *P. nigrescens* Smith & Radcliffe and *P. roseus* Alcock.

Species of these genera can be identified by measurements of the size and position of the dermal fossa of the ventral light organ, expressed as a percentage of ventral fin base to anal fin origin distance (InV-af) (Paulin, in prep).

Material is lodged in these institutions: Australian Museum, Sydney (AMS); Queensland Museum, Brisbane (QM); Muséum National d'Histoire Naturelle, Paris (MNHN); National Museum of Natural History (USNM); Zoologisk Museum, Copenhagen (ZMC).

Gadella norops sp. nov.

Physiculus edelmanni-Paulin 1983: 116 (not Brauer, 1908).

Material examined. Holotype: Western Australia, Port Hedland (18°41'S, 116°46'E), 506-508 m, 13 Apr 1982, AMS I.22827-003.

Paratypes: New South Wales. off Sydney (33°45'S, 151°5.5'E), AMS I. 17857-008; east of Clarence River (29°26'-20'S, 153°49'-59'E), 450 m; AMS I.19096-005.

Queensland. Off Tweed Heads, (28°3'S, 154°4'E), 731 m, 6 Nov 1978, AMS I.21795-003.

Non-type material: Queensland. Off Brisbane (27°19'S, 153°54'E), 535 m, QM I.21030.

New South Wales. Newcastle (33°8'S, 157°27'E), 586 m, AMS I.21805-001. Ballina-Tweed Heads (28°17'S, 153°53'E), 200 m, AMS I.23993.

Western Australia. Port Hedland (17°59'S, 118°17'E), 404-420 m, 3 Apr 1982, AMS I.22808-024. Port Hedland (18°29'S, 116°36'E), 696-704 m, 6 Apr 1982, AMS I.22814-017. North-east of Bluff Point (27°9'16"S, 112°7'50"E), 294-297 m, 22 Aug 1979, USNM 262075; (27°9'16"S, 112°47'50"E), 294-297 m, 22 Aug 1979, USNM 262073; (27°32'41"S, 112°58'59"E), 226-302 m, 27 Jul 1979, USNM 262074.

New Zealand. Bay of Plenty, NMNZ P20267.

New Caledonia?. USNM 262076.

Diagnosis. Barbel absent; light organ very small, 4.0% (1.4-6.4% InV-af and placed closer to anus than interventral line; distance from interventral line to anterior margin of light organ 39.6% (36.2-42.5%) InV-af; distance from posterior margin of light organ to anterior margin of anus 30.6% (25.9-35.6%) InV-af; gular scales absent; ventral fins reaching 10th anal ray; first dorsal

fin rays not elongated; second dorsal fin ray counts more than 72; interorbital width greater than 7.9% SL.

Description. Dorsal rays 8-10, 72-77; anal rays 71-78; pectoral rays 21-27; scales in longitudinal series about 120, scales between base of first dorsal fin and lateral line 9-12; gill rakers 2-5 + 9-12; vertebrae 62-63.

Measurements. (Mean with range in parenthesis) as percent standard length. Greatest depth of body 17.6(12.8-20.9); least depth of caudal peduncle 1.9(1.6-2.0); length of head 22.3 (20.6-26.0); width of head 18.7(16.8-20.1); horizontal diameter of orbit 4.4 (3.4-5.6); length of snout 5.4(4.6-6.0); length of maxilla 11.5 (10.7-13.5); width of bony interorbital 9.0(7.9-10.5); predorsal length 26.1(23.4-29.8); length of pectoral fin 18.0(16.3-20.1). Body elongate, compressed, greatest depth below first dorsal fin. Head wider than deep. Maxilla extending to beyond hind margin of orbit. Teeth in upper jaw equal sized, in villiform bands 4-5 teeth wide. Lower jaw with slightly larger subequal teeth in 3-4 rows. Gular region without scales. Gill membranes joined to each other and to isthmus far forward. Gill rakers long, slender, equal in length to opposite gill filaments.

First dorsal fin about same height as second. Vertical fin membranes without scales. Ventral fins reaching well beyond anal fin origin.

Lateral line commences above upper angle of opercle, reaches only to anterior third of second dorsal. A distinct continuous tube slightly behind first dorsal fin origin, thereafter a series of short discontinuous tubes.

Colour. (Fresh, from colour transparency kindly provided by Ken Graham). Head and body pinkish. Abdomen and sides of body just above pectoral fin insertion blue. Gular region, branchiostegal membranes, lips, and tips of vertical fins black.

Etymology. From the Greek *norops* (flashing) referring to the light organ in the belly.

Distribution. Australian coasts and the Bay of Plenty, New Zealand in depths of 200-750 m.

Remarks. *Gadella norops* is distinguished from other species in the genus by gill raker counts;

interorbital width, snout length, number and length of dorsal rays and in size of the ventral fossa of the light organ (Paulin, in prep). The species has previously been recorded from Australia as *Physiculus edelmanni* Brauer (Paulin, 1983).

***Physiculus therosideros* sp. nov.**

Material examined. Holotype: New South Wales. Scott Point, (30°43'S, 153°16'E), 134-151 m, 10 Oct 1978, AMS 1.23685.

Paratypes: Queensland. Off Caloundra, (26°31'S, 153°50'E), 240-330 m, AMS 1.15550-003. Off Southport (27°52'S, 153°55'E), 245 m, QM 1.21060.

Non-type material: Queensland. Off Southport (28°7'S, 153°54'E), 274 m, QM 1.21145.

New Caledonia. MNHN 1980-335, 1980-560.

New Zealand. Raoul Island, Kermadecs (29°15'S, 177°57'W), 83 m, 3 Mar 1952, ZMC 676.

Diagnosis. Barbel present; light organ large, 13.7% (11.2-18.6%) InV-af and placed closer to anus than interventral line; distance from interventral line to anterior margin of light organ 27.2% (24.7-28.3%) InV-af; distance from posterior margin of light organ to anterior margin of anus 14.4% (11.2-18.6%) InV-af. Teeth equal sized; gular scales present; scales present on dorsal fin membrane; gill rakers of moderate length, slender; continuous tube of lateral line reaching origin of second dorsal fin.

Description. Dorsal rays 8-9, 60-63; anal rays 62-66; pectoral rays 24-25; scales in longitudinal series c118-120, scales between first dorsal base and lateral line 8-9; gill rakers 2-3 + 7-9; vertebrae 52-55.

Measurements. (Mean with range in parenthesis), as percent standard length. Greatest depth of body 18.4(16.0-21.1); least depth of caudal peduncle 2.5(2.4-2.6); length of head 25.4(22.1-26.6); width of head 17.9(15.2-20.1); horizontal diameter of eye 6.0(5.4-6.4); length of snout 5.7(5.1-6.8); length of maxilla 11.7(10.1-12.7); width of bony interorbital 5.3(4.1-6.6); barbel length 5.1(4.3-7.2); predorsal length 29.7 (27.8-31.8); pectoral length 15.5(14.9-16.2).

Body elongate, compressed, greatest depth below first dorsal. Head slightly wider than deep. Maxilla extending to about hind margin of eye. Teeth in villiform bands, 6-7 teeth wide in upper jaw, 4-5 in lower. Barbel slightly less than diameter of eye. Gular region with scales. Gill membranes joined to each other and to isthmus.

Gill rakers of moderate length, slender, not spiny, about two-thirds as long as opposite gill filaments.

First dorsal fin about same height as second. Vertical fin membranes with small scales. Ventral fins reaching just beyond anal fin origin to about third anal ray.

Lateral line commences above upper angle of opercle, straight, gradually descending beyond origin of anal fin to mid-line of body. A distinct continuous tube for a distance equal to length of head, thereafter interrupted, not visible beyond mid-point of anal fin.

Colour. (preserved). Head and body pinkish or yellowish tan. Abdomen blue-black. Gular region, branchiostegal membranes, lips and tips of vertical fins dark brownish black.

Etymology. From the Greek *theros* (summer) and *sideros* (iron). Named for the vessel "Iron Summer" which conducted a deepwater survey for Queensland Fisheries Research between July 1982

and June 1983 and collected specimens of this species.

Distribution. *Physiculus therosideros* is known from New South Wales and Queensland, Australia, New Caledonia and the Kermadec Islands in depths of 83-330 m.

Remarks. *Physiculus therosideros* is distinguished from all species of the genus by the size and position of the ventral fossa of the light organ, the presence of scales on both the gular region and the vertical fin membranes, scale size, length of the lateral line and equal sized teeth (Paulin, in prep).

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NEW AUSTRALIAN FISHES. PART 18.
A NEW SPECIES OF *COCOTROPUS* (APLOACTINIDAE)

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Abstract

Poss, S. G. and Allen, G.R., 1987. New Australian fishes. Part 18. A new species of *Cocotropus* (Aploactinidae). *Mem. Mus. Vict.* 48: 79-82.

A new species of velvetfish (Aploactinidae), *Cocotropus larvatus*, is described from specimens taken from the Marshall Islands, the Ryukyus, Great Banda Island, and from Christmas Island in the Indian Ocean. *C. larvatus* can be distinguished from other species of *Cocotropus*, except *C. roseus*, by its combination of high pectoral, dorsal, and anal counts. It differs from *C. roseus* in having a more convex snout profile, a more compressed body, and in coloration. The new species is the first aploactinid reported from the Central Pacific.

Introduction

The Aploactinidae contains 30 species belonging to 15 genera (Poss and Eschmeyer, 1978, 1979, 1980; Poss, 1982). The family is closely related to the Scorpaenidae and is confined to the western Pacific and Indian Oceans. Most species occur in the Australian and Indo-Malaysian regions. Twelve species and nine genera are currently known from Australia. Although there is scant information on their ecology, most appear to live in crevices on rocky, coral rubble, or coralline algae substrata. Some species frequently appear in trawls.

The present paper describes a new species of the genus *Cocotropus*, expanding the largest genus of velvetfishes to 8 species. In addition to this new species, the genus contains the following taxa: *Cocotropus echinatus* (Cantor, 1850) from Malaysia, *C. dermacanthus* Bleeker, 1852 from Indonesia, *C. roseus* Day, 1878 from India, *C. altipinnis* Waite, 1903 from Lord Howe Island, *C. monacanthus* Gilchrist, 1906 from South Africa, *C. masudai* Matsubara, 1943 from Japan, and *C. steinitzi* Eschmeyer and Dor, 1978 from Indian Ocean localities. Several closely related species, previously placed in *Cocotropus*, have been transferred to *Paraploactis* by Poss and Eschmeyer (1978).

***Cocotropus larvatus* sp. nov.**

Figure 1

Material examined. Holotype: Marshall Is., Kwajalein Atoll, outside reef off Ennubuj Islet, rubble bottom, caught by hand under rubble, by day, Scott Johnson, 2 Jun 1983, BPBM 29211 (1 male 49.8 mm SL).

Paratypes: Ryukyu Is. West side of Sesoke Is., on sand and rubble bottom at base of reef front, 15-18 m, rotenone, J. Randall and T. Yoshino, 12 Sep 1977, BPBM 22297 (1, 41.2 mm SL), URM P4282 (2, 36.7, 14.0).

Banda Is. Just west of northern-most tip of Great Banda Is. (04°30'30"S, 129°56'10"E), stn VGS 74-11, 0-18.3 m, rotenone, V.G. Springer, 9 Mar 1974, USNM 280267 (1, 34.7).

Christmas Is. (10°26'S, 105°40'E), 35-40 m, rotenone, collected from vertical drop-off, G.R. Allen and R. Steene, 2 Jul 1986, WAM P29008-001 (1, 22.0).

Description. Dorsal XIII, 9(5)*, XIII, 10(1) (counts for holotype denoted by asterisk; last two rays borne on one pterygiophore and counted as one ray, anal II, 8(3), II, 9(3)* (last two rays counted as one); pectoral 13(1)*, 14(5); pelvic I, 3; vertebrae 27(5)*, 28(1).

Head markedly compressed, and covered with modified scales, each of which ends in a spinous point; few scales on snout, none in interorbit. Dorsal profile of head concave, anterior part inclined dorsoposteriorly about 45° from horizontal, posterior part steeper, inclined about 60°

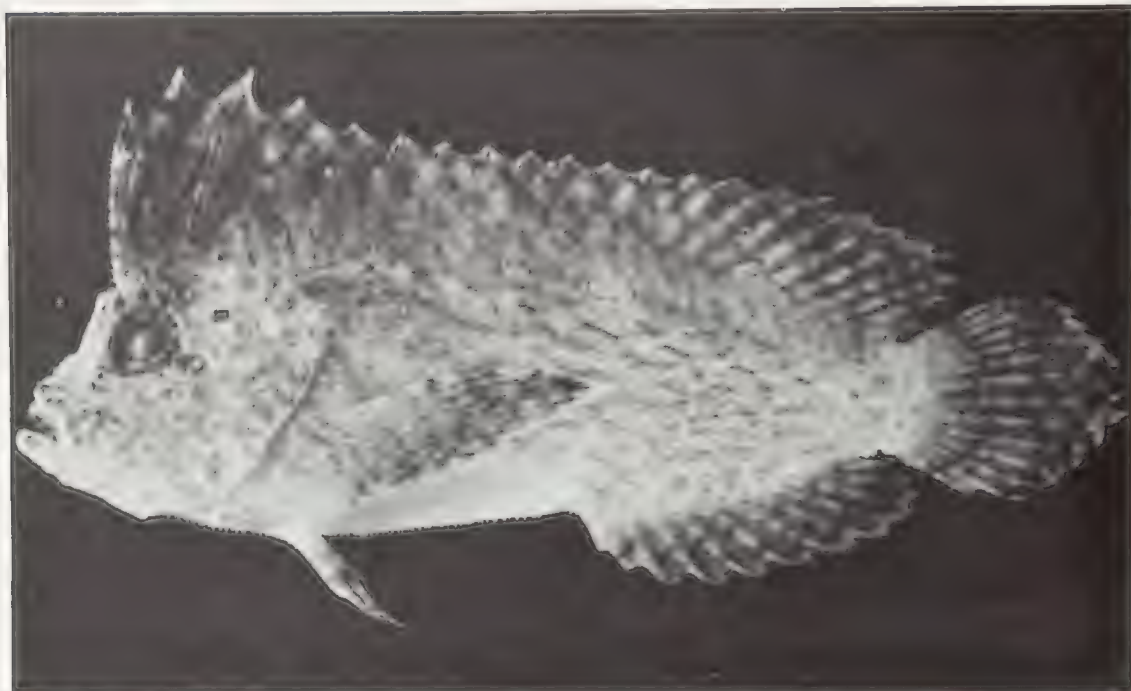


Figure 1. Holotype of *Cocotropus larvatus* (BPBM 29211; 49.8 mm SL) in lateral view.

from horizontal. Lacrimal spines connected at base. First spine points ventrally and slightly posteriorly over maxilla. Second spine of about equal size, points posteroventrally. A small blunt spinous knob at base of first spine; similar but larger knob at base of second spine near middle of bone on a ridge which runs to lateral ethmoid. Second infraorbital bone with a blunt spine that projects laterally from near centre of raised margins. Third infraorbital bone with a prominent blade-like but blunt spine that projects laterally. Interorbital ridges prominent, converge posteriorly to meet at midline. Posterior end of each ridge with a short tufted cirrus; better developed in smaller specimens. Nasal bone tubular, without spine. Anterior nostril prominent, pore midway between eye and tip of snout. Posterior nostril just anterior to orbit with slightly raised margin. Preopercular and supraorbital lateral-line pores of moderate size; form short tubes. Preopercle with 5 blunt spines; dorsalmost project laterally and slightly dorsally as well as posteriorly; about equal in size to third from

above. Second from above also projects laterally as well as posteriorly; about equal or slightly smaller than those above and below. Ventral preopercular spines smaller. Opercle with 2 ridges, more dorsal better developed; each ends in spine. Dorsal margin of opercle inclined dorsoposteriorly about 20° above horizontal. Interopercle without spine on dorsoposterior margin. Parietal spine a prominent blunt knob. Pterotic spine strong, blunt. Ventral margin of posttemporal with a strong blunt spine. Cleithrum without spine. Ventral margin of dentary strongly projects medially. Mandibular lateral-line pores of moderate size, 5 on each side. Ventral surface of lower jaw with numerous papillae and two rows of tufted or papillose cirri, outer row usually larger; more papillose in smaller specimens. Angular bone projects ventrally. Mouth slightly upturned. Maxilla extends to below anterior margin of pupil. Maxilla with prickles but without cirrus. Minute teeth on the vomer, none on the palatines. Gill rakers short knobs; 7-10 total, 2-3 on upper arch, 5-7 on lower

arch. Pseudobranch with 4-6 filaments. No slit behind posterior hemibranch. Branchiostegal rays 6. Branchiostegal membranes of each side not fused to isthmus. Isthmus with a fleshy extension anteriorly.

Body extremely compressed. Body depth 2.8 to 3.2 in SL. Longest spinous points on scales on dorsum behind head about 2-3 times as long as wide near base. Lateral line not high on body; with 9-11 tubed scales, each with small paired projections which extend laterally, last extends over base of caudal fin.

Dorsal fin originates over anterior margin of pupil. First dorsal spine longest, spines decrease in length posteriorly until eighth or ninth spine; decrease most pronounced in smaller specimens. Dorsal fin membrane weakly incised. Pectoral fin rounded, with 14 rays, longest (4th from above) reaches just past anus. Pelvic fin membrane not adnate to body. Caudal fin rounded, somewhat elongate with 18(5) or 19(1) total (9 upper / 9-10 lower) fin ray elements. Caudal skeleton with parhypural and hypurals 1 and 2 fused, hypurals 3 and 4 fused, hypural 5 autogenous; 2 epurals; preural neural spine long, narrow.

Colour in life tan or cream coloured, covered with numerous rather regularly scattered small dark brown spots each of which is usually surrounded by larger but lighter and more diffuse brown spot or splotch. Diffuse spots arranged in nearly oblique bands in holotype but not in smaller specimens. The dark brown spots are often elongate and form dash-like lines; those between lateral line scales particularly prominent; intensity of elongate spots decreases in larger specimens. Snout and dorsal surface of head covered with brown and greyish brown spot or splotches, similar but somewhat larger and more distinct than those over body and usually surrounded and accentuated by a thin whitish border; those around eye, particularly ventrally, especially dark and radiate from pupil. Prominent dark spot on pterotic spine; another on parietal spine. Ventral side of head and pelvic fins notably pale and cream coloured. A conspicuous chalk white spot on or just above lateral line between scales 3 to 5.

Dorsal and anal fins notably lighter in colour than body and transparent posteriorly. Brownish grey spots or splotches, similar in size and shape

to those on snout and dorsal part of head, cover fins. They are smaller, more transparent, and more closely set posteriorly than anteriorly, giving the fins a laced, reticulate appearance posteriorly. Dorsal fin more densely pigmented subterminally. Caudal fin pattern like that of posterior part of dorsal and anal fins; in holotype small spots coalesce to form a narrow band near base of fin. Pectoral fin with conspicuous brown or greyish brown spots or splotches like those on dorsal surface of head.

Colour in 70% ethanol light brown or tan. Small darker brown specks and brown elongate markings scattered over head, body, and fins; most prominent on head and fins and in smaller specimens. Belly and ventral side of head with few such marks. A cream coloured spot just dorsal to lateral line. A distinct, but narrow and intermittent brown stripe runs between lateral-line scales.

Measurements for the six type specimens are as follows (holotype first followed by paratypes; percent SL in parentheses): Standard length 49.8, 41.2, 36.7, 34.7, 22.0, 14.0. Head 18.2(36), 14.8(36), 13.1(36), 12.5(36), 7.6(34), 5.6(40). Snout 5.2(10), 4.1(11), 3.6(10), 3.4(10), 2.2(10), 1.6(11). Orbit 4.3(9), 3.5(8), 3.1(8), 3.3(9), 1.9(9), 1.4(10). Interorbit 4.0(8), 2.6(6), 2.3(6), 2.5 (7), 1.1(5), 1.2(8). Upper-jaw length 6.9(14), 5.4(13), 4.9(13), 4.9(14), 3.1(14), 2.6(16). Postorbital 7.9(16), 6.5(16), 5.6(15), 5.5(16), 3.6(16), 2.6(19). Greatest body depth 16.7(33), 12.7 (31), 11.7(31), 11.0(32), 7.0(32), 4.9(35). Anal fin 19.5(39), 16.0(39), 13.8(38), 13.9(40), 8.2(37), 5.3(38). Caudal fin 14.5 (29), 13.2(32), 11.6(32), 10.7(31), 6.5(29), 4.6(33). Pectoral fin 15.3(31), 12.6(31), 10.9(30), 9.5(27), 6.2(28), 4.3(31). Pelvic fin 8.2(16), 7.1(17), 6.1(17), 4.9(14), 4.0(18), 2.5(18). Length of first dorsal spine 11.2(22), 10.5(25), 9.3(25), 8.5(24), 5.5 (25), 3.2(23); second 12.2(24), 10.0(24), 9.4(26), 8.7(25), 5.0 (23), 3.3(24); third 11.9(24), 8.9(22), 7.9(21), 7.7(22), 4.3(19), 2.3(16); fourth 9.6(19), 6.6(16), 4.9(13), 5.7(16), 2.8(13), 1.7 (12); fifth 7.2(14), 5.3(13), 3.7(10), 3.7(11), 2.3(10), 1.2(9); penultimate 6.7(13), 5.5(13), 4.4(12), 4.1(12), 2.6(12), 1.7(12); last 7.0(14), 5.8(14), 4.8(13), 4.4(13), 2.8(13), 2.0(14). Length of first anal spine 2.8(6), 2.8(7), 2.1(6), 2.2(6), 1.5(7), 0.9 (6); second 3.8(8), 3.7(9), 3.0(8), 3.0(9), 2.1(9), 1.2(8). Least depth of caudal peduncle

5.7(11), 3.8(9), 3.6(9), 3.6(10), 2.3 (10), 1.6(11). Distance from tip of snout to first dorsal spine (predorsal length) 8.7(17), 6.4(15), 5.7(15), 5.5(16), 3.2(14), 2.3(16); to second spine 10.7(21), 8.0(19), 6.7(18), 6.5(19), 4.0 (18), 3.0(29); to third 12.1(24), 9.6(23), 8.3(23), 8.4(24), 4.6 (21), 3.8(27); to fourth 15.5(31), 12.7(31), 11.0(30), 11.0(32), 6.3(29), 4.8(34); to fifth 19.4(39), 16.4(40), 13.9(38), 13.5 (39), 8.0(36), 5.5(39). Transverse width of first dorsal spine at midlength 0.5(1.0), 0.4(1.0), 0.3(0.8), 0.5(1.4), 0.3(1.4), 0.1(0.7). Incision of dorsal-fin membrane at fourth dorsal spine (from tip to membrane) 0.1(0.2), 0.1(0.2), 0.3(0.3), 0.2(0.6), 0.2(0.9), 0.2(1.4).

Etymology. From the Latin *larva* (ghost), referring to its ghost-like appearance and small size.

Comparisons. The new species can be distinguished from most other members of the genus by its high counts when considered in combination. Only *Cocotropus roseus* has a pectoral fin ray count as high as 14 and equally high dorsal and anal fin ray counts. However, *C. roseus* is a much less compressed species and lacks the pronounced development of the blunt head spines and the combination of distinct, often elongate, dark spots and intermittent dashed lines along the lateral line and a reticulate colour pattern on its fins. *C. larvatus* also differs in having the snout and interorbit distinctly more concave in lateral view.

Distribution. *Cocotropus larvatus* has been collected from Kwajeleln Atoll in the Marshall Is., Sesoko Is. in the Ryukyu Is., from Great Banda Is., and from Christmas Is. in the eastern Indian Ocean. This species occurs inshore from near the surface to 40 m. This species is the first aploactinid to be described from the Pacific Plate (see Springer, 1982).

Acknowledgements

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NEW AUSTRALIAN FISHES. PART 19.
A NEW SPECIES OF *LEPIDOPERCA* (SERRANIDAE)

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Abstract

Roberts, C.D., 1987. New Australian fishes. Part 19. A new species of *Lepidoperca* (Serranidae). *Mem. Mus. Vict.* 48: 83-84.

Lepidoperca filamenta sp. nov. is described from 15 specimens collected off southern and south-western Australia. It can be distinguished by dark blotches on the anterior base of soft dorsal, anterior soft anal and pectoral fins, and a lunate caudal fin.

Introduction

Part of an ongoing study (Roberts, in prep.) on the taxonomy of anthiine serranids of the genus *Lepidoperca* Regan has focussed on the orange perches of Australia and New Zealand currently referred to the species *L. pulchella* Waite. It is now apparent that at least four species are represented in the complex. The purpose of this paper is to name and diagnose a new species belonging to this complex from southern and south-western Australia.

Counts and measurements (to the nearest 0.1 mm with dial calipers) were made following the methods of Hubbs and Lagler (1964). Counts of scale rows exclude the small, often irregular scales sheathing the fin bases; the last ray of the dorsal and anal fin usually branches to its base and was counted as one ray; fin ray counts were confirmed from radiographs; lengths of specimens are all standard lengths unless otherwise stated. Standard length and upper jaw length were measured from the anterior median point on the upper lip; bony orbit diameter is the horizontal distance between bony margins; length of dorsal lobe of caudal fin is the oblique distance from the base of the shortest caudal ray to the distal tip of the longest dorsal caudal ray.

Abbreviations are as follows: Australian Museum, Sydney (AMS); Western Australian Museum, Perth (WAM); standard length (SL); total length (TL); head length (HL).

Lepidoperca filamenta sp. nov.

Anthias pulchellus pulchellus.—Glover & Branden, 1978: 57, fig. 3, South Australia, off Port Lincoln (not Waite).

Material examined. Holotype: Western Australia, west of Eucla, Great Australian Bight (32°20'S, 128°00'E), trawled 128-200 m depth, F.I.V. "Endeavour", Mar 1912, AMS I.12339 (116.4 mm SL, 165.5 mm TL).

Paratypes: Western Australia, type locality, 14 specimens: AMS E.2356 (129.0 mm), AMS E.2357 (134.5 mm); AMS E.2358 (128.5 mm), AMS E.2359 (127.4 mm), AMS E.2360 (128.0 mm), AMS E.2361 (128.0 mm), AMS I.12335 (126.5 mm), AMS I.12336 (124.8 mm), AMS I.12337 (133.0 mm), AMS I.12338 (132.1 mm), AMS I.12340 (119.0 mm). Between Cape Naturaliste and Geraldton, trawled 137-220 m depth, F.I.V. "Endeavour", 1912, AMS E.2489 (103.0 mm). c. 150 km south-west of Eucla, Great Australian Bight (33°17'S, 128°32'E), trawled, depth unknown, F.V. "Orsino", 21 Apr 1978 WAM P.26804-001 (106.9-127.4 mm).

Diagnosis. Dorsal fin rays X,16-17 (X,17 in holotype); anal fin rays III, 8; pectoral fin rays 15; pored lateral line scales 39-43 (41); upper transverse scale rows 4, lower transverse scale rows 12-14 (14); gill rakers 9-10 + 24-27 = 33-37 (9 + 26 = 35). Upper jaw length 2.08-2.43 (2.08) in HL; maxilla reaching to below middle of pupil. Caudal fin lunate, its dorsal lobe 0.83-1.10 (0.83) in HL. Pelvic fin long, 2.44-2.90 (2.66) in SL. Basal part of spinous dorsal fin scaled; axil of pectoral fin scaled. Large, dark blotch on anterior of soft dorsal fin; a small dark blotch at centre of pectoral fin and on anterior of soft anal fin.

Etymology. From the latin *filum* (thread) and -

mentum (forming) refering to the long filamentous rays of the caudal fin lobes.

Distribution. Coastal waters of southern and south-west Australia at depths of 128-220 m.

Remarks. *Lepidoperca filamenta* can be distinguished from its congeners, except *L. pulchella* and *L. occidentalis* Whitley, by a large dark blotch on the anterior base of the soft dorsal fin and a lunate caudal fin.

Lepidoperca filamenta is morphologically closest to *L. pulchella* Waite, but differs from it in having a lower number of scales in upper transverse series (4 cf. 5), longer caudal fin (dorsal lobe 0.83-1.10 cf. 1.17-1.41 in HL), and a small dark blotch at the centre of anal and pectoral fins (cf. absent). In addition, modal differences are found in the following characters: pored lateral line scales (39-43 cf. 42-45), gill rakers on lower arch (24-27 cf. 26-30), bony orbit diameter (2.40-3.02 cf. 2.60-3.54 in HL), upper jaw length (2.18-2.43 cf. 2.28-2.54 in HL), longest anal soft ray (1.27-1.74 cf. 1.68-2.48 in HL) and pelvic fin length (2.88-3.38 cf. 3.18-3.88 in SL).

Lepidoperca filamenta differs from *L. occidentalis*, the only other species in the genus recorded from south-western Australia, by a lower number of tubed lateral line scales (39-43 cf. 44-48), greater body depth (2.29-2.58 cf. 3.18-3.95 in SL), spinous dorsal fin scaled basally (cf. naked), and a dark blotch extending between basal part of anterior 5-7 soft dorsal fin rays (cf. extending between tips of anterior 3 soft dorsal fin rays). Both species differ from others in the genus by having a lunate caudal fin.

Acknowledgements

I thank John Paxton (AMS) and Barry Hutchins (WAM) for the loan of specimens in their care. The manuscript was read by Chris Paulin (National Museum of New Zealand).

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NEW AUSTRALIAN FISHES. PART 20. A NEW SPECIES OF *APLODACTYLUS* (APLODACTYLIDAE)

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Abstract

Russell, B.C., 1987. New Australian fishes. Part 20. A new species of *Aplodactylus* (Aplodactylidae). *Mem. Mus. Vict.* 48: 85-87.

Aplodactylus westralis sp. nov., from south-western Australia, is described. It is separable from other species of *Aplodactylus* by the following combination of characters: lanceolate teeth, distinctly convex interorbital space, obtuse head profile, and reticulate pattern of pale markings on the body and fins.

Introduction

The family Aplodactylidae presently contains four species belonging to two nominal genera: *Crinodus lophodon* (Günther) from New South Wales; *Aplodactylus arcidens* Richardson from New Zealand, Victoria, South Australia and Tasmania; *A. etheridgii* (Ogilby) from north-eastern New Zealand, Kermadec Islands, Lord Howe Island, Norfolk Island, New South Wales and Victoria; and *A. punctatus* (Valenciennes) from Chile and Peru. An additional species, *Aplodactylus westralis* sp. nov., collected from south-western Australia is described herein.

In the following description, morphological values for the holotype are presented first and ranges for the paratypes follow in parentheses. Type specimens are deposited in the Australian Museum, Sydney (AMS) and the Western Australian Museum, Perth (WAM).

Aplodactylus westralis sp. nov.

Figure 1

Crinodus lophodon.—Mees, 1960: 16 (non Günther).

Dactylosargus arcidens.—Hutchins, 1979: 62, 97, pl. 47 (non Richardson).

Dactylosargus sp.—Hutchins & Thompson, 1983: 48, 83, fig. 216.

Aplodactylus sp. Hutchins & Swainston, 1986: 78, 135, fig. 414.

Material examined. Holotype: Western Australia, Canal Rocks, Cape Naturaliste (33°40'S, 115°00'E), speared by B.C. Russell, 1 Apr 1978, AMS I.20233-012 (325 mm SL).

Paratypes (5 specimens): Western Australia, Wilsons Inlet (35°00'S, 117°20'E), B.J. Allen, 31 Dec 1959, WAM P4728-001 (235 mm SL); Cheynes Beach (34°35'S, 118°46'E), P. Ewers, May 1972, WAM P21799-001 (300 mm SL); Busselton (33°39'S, 115°00'E), netted by J.S. Blue, Nov 1963, WAM P5877-001 (530 mm SL); Geographe Bay (33°37'S, 115°18'E), speared Sep 1977, WAM P25931-001 (347 mm SL); Fremantle (32°03'S, 115°44'E), handlined, Sep 1977, WAM P25930-001 (335.2 mm SL).

Diagnosis. Dorsal-fin rays XVIII, 18 (XVII, 18-XVIII, 19); anal-fin rays III, 7; pectoral-fin rays i, 14 (i, 13-14); lateral-line scales 96 (92-100); gill rakers 6+15 (7-9+14-18); vertebrae 16+18; epipleural ribs on first 13 (11) vertebrae.

Body elongate, greatest depth 3.9 (3.7-4.7) in SL; greatest width 5.7 (5.4-7.6) in SL; head length 4.4 (4.3-4.5) in SL; snout short, 2.7 (2.6-2.8) in head; dorsal profile of head obtusely angled in front of eye, snout and nape subtending an angle of about 135°; orbital diameter 5.9 (4.8-6.5) in head; interorbital space convex medially, least width of interorbital 4.2 (3.6-4.5) in head; least depth of caudal peduncle 1.9 (1.9-2.4) in head; peduncle length 2.3 (2.0-2.6) in head; base of dorsal fin long, with elongate notch between spinous and soft parts of fin, basal length of soft dorsal fin 1.3 (1.2-1.4) in length of spinous part; anal fin short, basal length 2.0 (2.0-2.5) in head; pectoral-fin length 1.1 (1.1-1.2) in head, ventralmost 6 (5-6) rays simple, fleshy; pelvic-fin length 1.3 (1.3-1.5) in head, rays fleshy.

Mouth small, somewhat ventral on head; lips fleshy, upper lip projecting, maxilla reaching a

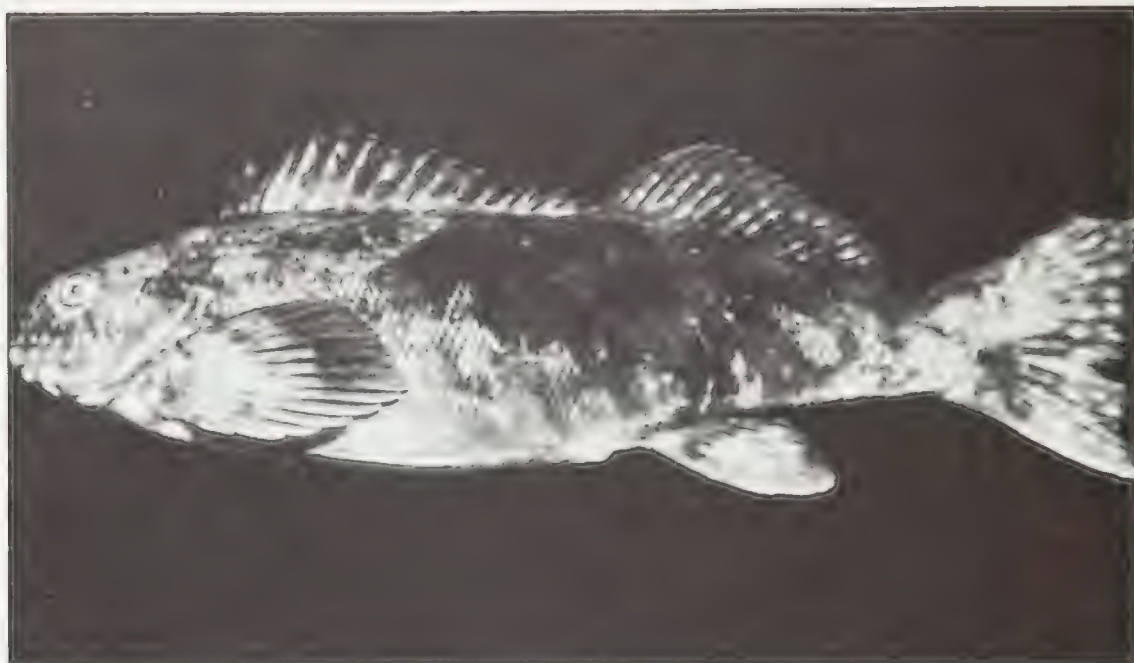


Fig. 1. *Aplodactylus westralis* sp. nov., holotype, 325 mm SL, AMS I.20233-012.

vertical through posterior nostril; teeth small, lanceolate, in 5-6 rows in jaws, outermost row of teeth largest; tiny crescent-shaped patch of vomerine teeth; two pair of nostrils, anterior pair with fleshy tentaculate flaps on anteroventral margin and posteroventral margin; opercle with broad flat spine which does not extend to the fleshy margin; scales small, cycloid, embedded, extending onto cheeks and opercles, and forming a sheath along base of spinous dorsal fin.

Colour when fresh: body brown or slatey-grey, with 6 dark saddles above lateral line, these giving way below to irregular bars that extend to ventral midline; interspaces between saddles and bars pale brown or whitish (some specimens with interspaces reduced or coalesced to form pale mottles); numerous pale brown or whitish spots, about diameter of pupil, mostly on head and unpaired fins. Pattern on body fades quickly on capture, and colour in alcohol is dark brownish with paler mottling and spots. Some specimens with black blotch on opercle near posterodorsal margin.

Distribution. Western Australia, from Rottnest Island to Twilight Cove, Great Australian Bight (B.

Hutchins, pers. comm); South Australia, Stenhouse Bay, York Peninsula (B. Hutchins, pers. comm). Common in weedy reef areas down to about 20 m.

Etymology. *Westralis*, alluding to its distribution in south-western Australia.

Remarks. *Aplodactylus westralis* has previously been misidentified in Western Australia as *Crinodus lophodon* (Mees, 1960) and as *Dactylosargus* (= *Aplodactylus*) *arctidens* Hutchins, 1979). It closely resembles *C. lophodon* in colour pattern but the monotypic *Crinodus* is separable from species of *Aplodactylus* by its 2-3 rows of jaw teeth (versus 5-6 rows in *Aplodactylus*), its lack of vomerine teeth, and its larger scales (lateral-line scales 72-74, versus 80 in *Aplodactylus*). Other Australian species of *Aplodactylus* are readily distinguishable from *A. westralis* on the basis of colour pattern: *A. arctidens* has a reticulate pattern of pale markings on the body and fins; while *A. etheridgii* has numerous small spots (less than diameter of pupil) over the entire body.

Aplodactylus westralis can also be separated from other Australian species of the genus in having lanceolate teeth (versus multicuspid in *A. etheridgii*, and tricuspid in *A. arctidens*), a distinctly convex interorbital space (versus concave in *A. etheridgii*), and a distinctly obtuse head profile (versus more evenly rounded in *A. arctidens*).

This species was illustrated in colour by Hutchins (1979: pl. 47) and Hutchins and Swainson (1986). Hutchins and Thompson (1983: fig. 216).

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NEW AUSTRALIAN FISHES. PART 21. A NEW SPECIES OF *CENTROBERYX* (BERYCIDAE)

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Abstract

Shimizu, T. and Hutchins, J. B., 1987. New Australian fishes. Part 21. A new species of *Centroberyx* (Berycidae). *Mem. Mus. Vict.* 48: 89-90.

Centroberyx australis is described as new from south-western Australian seas. It is distinguished from the closely related *C. gerrardi* (Günther) by a higher lateral line count (39-41 vs 36-38), coarser body scales, different nostril configuration, and eye coloration (yellow vs red).

Introduction

Hutchins and Thompson (1983) illustrated a species of *Centroberyx* from south-western Australia similar in general appearance to *C. gerrardi* (Günther), but differing in having a yellow rather than a red eye. This paper describes the species as new.

The methods are those used by Hubbs and Lagler (1947). Material is lodged in the Western Australian Museum, Perth (WAM), Hokkaido University, Laboratory of Marine Zoology, Hokodate (HUMZ), and the National Science Museum, Tokyo (NSMT).

Centroberyx australis sp. nov.

Figure 1

Centroberyx species Hutchins & Thompson, 1983: 24, 77, fig. 83.

Material examined. Holotype: Western Australia, off Ocean Reef (31°47'S, 115°20'E), K. Bentley, handline, 18 Sep 1982, WAM P.27720-001 (202 mm SL).

Paratypes: Western Australia. 30-50 km off Ocean Reef, J.B. Hutchins, handline at 60-120 m, 30 Sep 1982, WAM P.27732-002 (3 specimens, 175-191 mm SL), NSMT-P 44392 (208 mm SL); off Ocean Reef, K. Bentley, handline at 90-100 m, 16 May 1982, WAM P.27607-002 (2 specimens, 185-209 mm SL); off Marmion (31°50'S, 15°20'E), K. Bentley, handline at 86 m, 18 Sep 1982, WAM P.28238-001 (201 mm SL); Great Australian Bight (33°16'S, 128°02'E), bottom trawl, 115 m, 24 Dec 1965, HUMZ 21044 (275 mm SL).

Description. Dorsal fin rays VI, 13-14; anal fin rays IV, 12-13; pectoral fin rays 13-15; pelvic fin rays I, 7; caudal fin rays iv, 1, 10, 9, 1, iv; branchiostegal rays 8; gill rakers 6-7/16-18; scale rows around caudal peduncle 18-19; lateral line scales 39-41; scales above lateral line 8-9; scales below lateral line 13-14; scales from pelvic base to anus 7-9; vertebrae 10/14. Body ovate, depth 46.0-49.7% SL; head large, length 38.8-41.3% SL; body compressed, width 45.6-49.3% SL. Snout length 23.4-26.6% of head length, 60.8-72.6% of eye diameter. Upper jaw long, posterior end almost reaching postorbital margin, length 55.4-61.5% head length. Eye large, diameter 33.0-39.8% head length. Interorbital convex, width 19.5-26.9% head length. Caudal peduncle rather long, depth 33.4-35.3% head length. Pectoral fin long and triangular, length 73.9-77.2, and pelvic fin length 55.4-65.1, both % head length. Nostrils large and close together, distance separating them subequal to diameter of rim of anterior one posterior nostril without rim; small bony knob on rear margin of anterior nostril. Body scales with long spinules on posterior margin, spinules on central portion more slender; scales across breast with short spinules; scales on dorsal and anal fin bases enlarged, forming a shallow scaly sheath; small scales extend on to caudal fin; axil of pectoral fin scaleless; pelvic fin with long axillary scale. V-shaped scales along pelvic fin base to anus,

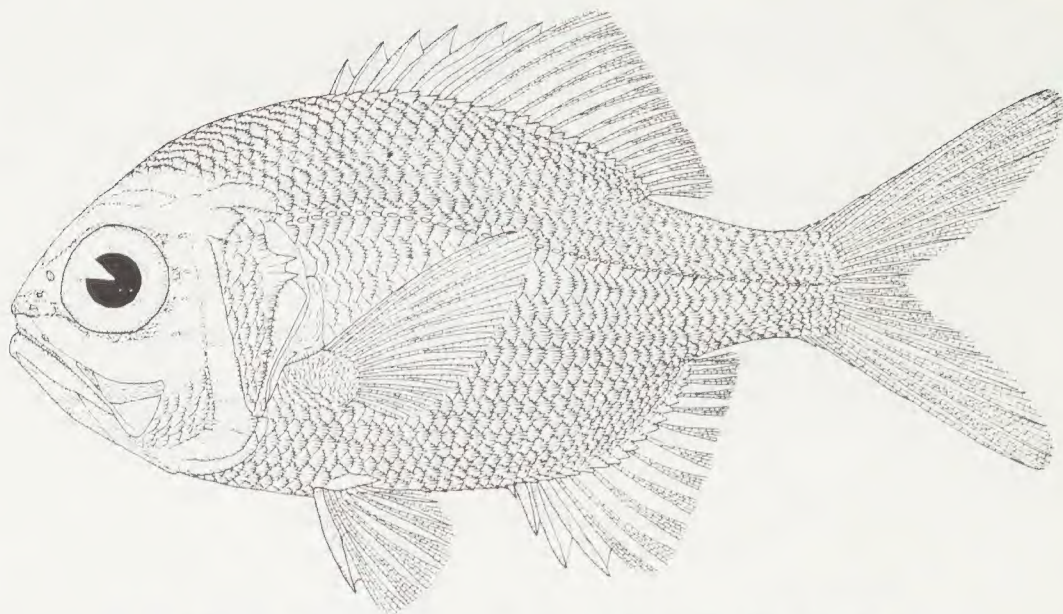


Figure 1. *Centroberyx australis*, holotype, WAM P.27720-001, 202 mm SL.

forming a sharp ventral ridge (each scale has a large central spinule on posterior margin). Scale pad present in two rows along dorsal midline, being more distinct anteriorly.

Colour in life: Head and body reddish orange, more silvery ventrally; each scale row appearing as a whitish longitudinal line; spines and rays of all fins pale reddish orange (noticeably darker in caudal), spine tips white, fin membranes transparent; posterior margin of caudal fin transparent; eye golden yellow, pupil black. Colour in ethanol: pale yellowish brown, more silvery on ventral half; eye yellowish to dusky.

Distribution. Great Australian Bight to the Mui-ron Islands, off North West Cape, Western Australia.

Etymology. From the Latin *australis* (southern) with reference to its distribution in southern Australian waters.

Remarks. *Centroberyx australis* is closely related to *C. gerrardi*, with which it occurs sympatrically,

differing in the higher lateral line count (39-41 vs 36-38), in the nostril configuration (in *C. gerrardi* the nostrils are separated by a distance far greater than the diameter of the anterior nostril), in coloration (lacks the latter's prominent white stripe along the lateral line, and has a yellow eye vs a red one), in maximum size (32 cm vs 66 cm) and has coarser body scales. *C. affinis* (Günther) has a higher dorsal spine count (7 vs 6) and a red eye. In addition, the nostrils of *C. affinis* are considerably larger in size and almost touching one another.

C. australis has never been collected at depths shallower than 50 m. It apparently occurs in schools off the bottom.

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